

# THE IRON AGE

Established 1855

New York, January 25, 1912

Vol. 89: No. 4

## Welfare Work in German Industries

Efficiency Its Underlying Idea—Thoroughgoing Measures for the Improvement of Shop and Living Conditions of Employees

BY C. A. TUPPER

In the minds of most Americans welfare work as conducted by employers of labor in Germany for the benefit of their men is associated with paternalism. One thinks instinctively of the model dwellings erected by Friedrich Krupp and his successor at Essen, of old age pensions, infirmaries, etc., maintained more or less in the form of benevolences. The idea of patronage, which was a remnant of the old feudal system, is, however, rapidly coming to be a thing of the past. Individual or corporate efforts to improve the condition of the working classes, aside from the part taken directly by the Government in providing industrial insurance, sanitary surroundings, amusement parks, etc., are now expressed along two distinct although related lines.

The spirit of the first of these was well put in a conversation which the writer had with an official of the Maschinenfabrik Augsburg-Nürnberg, at Nuremberg, in Bavaria, when he said: "Our animating motive (*leitender Gesichtspunkt*) in carrying out these policies has been to give them such shape that our employees enjoy their advantage not as gifts or charities, but as benefits upon which they have a just claim." For the second, the underlying object is the maintenance of good health, contentment and working efficiency, considering man as an animal to be kept in good condition, precisely the same as a draft-horse, but with the various factors of mentality added. It is with this phase of the subject that the present article has chiefly to deal.

### Care of Women and Children

In nothing does the Teutonic spirit of thoroughness better express itself; for a start is made at the very beginning, the prenatal influences. Many women are employed in the same establishments as their husbands, or in light manufacturing plants of the same vicinity. In the period of gestation such women are objects of practical solicitude on the part of their own or their husbands' employers; and care is taken that they do not work too many hours or for too long a period. The same care is exercised, in different ways, with respect to the women who remain at home. At any rate, as the time of delivery draws near the needs of the case are adequately provided for. The skilled workmen are, as a rule, sufficiently independent to make their choice of means to this end; but if the benefits of a regular maternity hospital are desirable, they can readily be had. Such institutions are maintained by municipalities, by mutual labor associations and very frequently by employers themselves. Among the plants visited by the writer which supported excellent maternity hospitals or visiting nurses were Haniel & Lueg, Düsseldorf, the Gutehoffnungshütte Oberhausen, and the Gesellschaft Deutscher Kaiser, or Thyssen & Co., at a suburb of Duisburg-Ruhrort.

The proper upbringing of the children is a matter in which the authorities directly interest themselves. They

are not allowed under any circumstances to run wild on the street, as we too often find to be the case in this country; and excellent educational facilities are provided. These begin with the kindergartens and carry the boy who is destined to be a workingman through a common or primary school course which ends when he is about 14; then, if he were to advance further, he would go on into a secondary school. Meanwhile he has had the opportunity for excellent physical training afforded by the numerous "turner" societies, which, with their gymnasiums and out-of-door exercise fields, are encouraged in every possible way by employers. Many of these societies are composed entirely of the employees of large establishments, with their families, the women and girls having their classes as well as the men and boys; and this is an influence which exerts itself very appreciably upon the health of employees all through the active periods of their lives. The only thing which seemed to the writer to be lacking is the spirit of play or sport. It is all done with such seriousness that one wonders if the Americans and English haven't injected one element, at least, into physical training which the Germans have missed. However, this impression may be due to superficial observation. There is among the turner societies a certain amount of competition for prizes and honors which may supply a part of the spirit, through the rivalry generated, and at one practice meet which the writer saw in Leipzig there appeared to be plenty of fun.

### Apprenticeship Systems

In the metal working industries it is quite the common thing for a boy to be taken into the works in which his father is employed, and the apprenticeship systems open to him are very good. All of the firms to which more or less extended reference has been made by the writer in previous articles prepared for *The Iron Age* have such systems. As an illustration, however, the one to be found at the works of the Ludwig Loewe & Co. Aktien Gesellschaft, Berlin, which is among the largest machine tool manufacturing companies of Europe, will serve to bring out the principal features pertinent to this article. It is in the development of trained, loyal workmen that the Loewe company has evolved methods which are well worth emulation by Americans.

The apprentices, of whom a large number are taken into the shops annually, work under ideal conditions, as concerns physical welfare, and in addition to learning their trade they receive instruction for a certain number of hours each week in a good school. This is recognized by the authorities as a regular continuation school. Education of apprentices either in a public or private continuation school conforming to specified standards is compulsory in most parts of the empire. The Loewe company, as well as many other large employers, goes much farther than legal requirements. There is very thorough teaching of mathematics, including not only arithmetic but also alge-

bra, trigonometry and geometry, and any apprentice who displays an aptitude for drawing or special work of any kind is given particular encouragement in that line.

#### Military Service and Later

After the apprenticeship course, the efforts of the German employer are supplemented in a manner not possible in this country, viz.: the training given to the young man as a soldier. When it comes time for serving in the army the graduates from the shops take their turn with other German youths. As recruits they are given a "setting-up" physically, instruction in hygiene and habits of discipline which are invaluable both to themselves and their employers in after life. To the writer's mind, the Prussian military system has been, in no small degree, responsible for the industrial development of the empire. If introduced in England, even in modified form, it would be a godsend to that country, if a traveler's impressions are any criterion.

Returning to industrial life, the apprentices go forth as journeymen machinists, with the recommendation and co-operation of their former employers, or else they settle down in the same shops where they were trained. Of the wanderers the larger number remains away; but a considerable percentage returns and places are found for them as soon as possible. In the case of the Loewe company and some others, it is interesting to note that considerable benefit is derived from the experience which the journeymen have had elsewhere. Soon after each has come back there is very apt to be a communication from him in one of the suggestion boxes. For ideas that can be used payments or other suitable rewards are paid. In fact, from the beginning of their training apprentices are encouraged to think for themselves. This tendency is not general through the empire, but at the present rate of progress observed by the writer, compared with what has been reported in previous years, the development of initiative soon will be very noticeable.

In all modern German shops the visitor is impressed with the mature, well-set-up appearance of the men, by the air of health and vigor manifested and by the confident, quiet manner in which they go about their tasks. They may be "slow," according to American standards, but "deliberate" would probably be the better term. At any rate, the work is well done, spoilages are rare and costly blunders still rarer. The German workman does not suffer from "nerves," and there can be no question that the excellent health in which he usually finds himself goes a long way toward insuring an even, steady output, which enables the manufacturer to make and keep definite terms of delivery.

#### Shop Refreshment

Not least among the requirements of the German workman is the opportunity of eating and drinking his fill. Therefore many of the provisions of welfare work (*wohlfahrts einrichtungen*) center about this need. In entering the works of A. G. Reinecker, at Chemnitz, one is struck by the sign "Kaffee" (coffee) in the middle of each shop, where a stand is placed for dispensing that refreshment, and something similar may be seen in almost every establishment. Usually, also, there is a canteen where beer can be obtained. There are, of course, everywhere in Germany, the usual pauses of about fifteen minutes at mid-forenoon and mid-afternoon for lunches, and an hour to an hour and a half at noon.

In the summer time it is not uncommon for the men to take their meals in the parks or gardens which surround many manufacturing plants, and often in the company of their wives and children. At the entrance to the works of Haniel & Lueg, for example, it is difficult to realize that one is within a few hundred feet of one of the largest plants in Germany. Here, also, the men have the advantage in winter or bad weather of a large messroom and food may be purchased at low prices in the canteen where beer is served. At some plants coffee is served free. The temperance movement is gaining ground in Germany, and while most employers countenance or even commend the drinking of malt liquors, others believe that the expense of serving coffee is a good investment. They would one and all, however, look with horror at the long lines of saloons which face most American metal-working plants, and the practice which obtains among workmen in this country of "knocking down" their checks at such places; the

rounds of "treating," waste of wages, etc., so common with us, would be almost unbelievable abroad. Furthermore, the too prevalent custom in democratic America of providing good eating places and even serving luncheons free for officials and office men, while utterly ignoring the needs of the shop worker, would breed rabid discontent in autocratic Prussia or Saxony.

#### Shop Hygiene and Sanitation

Among modern German manufacturing plants, hygiene and sanitation now hold a very prominent place in all provisions made for the well being and efficiency of employees. While the writer was in Dresden preparations were being pushed for a great exposition intended to bring out every possible phase of this subject and to demonstrate the most successful appliances. The best means of safeguarding the health of industrial workers were to be given particular emphasis. The affair was international in scope and invitations to exhibit had been sent broadcast. The response from other countries was not especially encouraging, but the Germans themselves, in various parts of the empire, had promised a participation sufficiently extensive to insure the success of the undertaking. This goes to show something of the progress that has been made during recent years.

In respect to ordinary arrangements, such as washing and bathing appliances, lockers, water closets, etc., modern metalworking establishments in Germany and the United States are about on a par; while there is the same provision in most of the up-to-date plants of both countries for good ventilation, lighting, etc., with perhaps less complete arrangements for heating German shops, but a more even maintenance of temperature where good systems do exist.

With the larger questions of sanitation, however, such as the complete dissolution of the noxious elements of sewage, including closet waste, in septic tanks or otherwise, the Germans seem disposed to make a more thorough practical application than Americans are doing, of the results of scientific investigation. There are, of course, notorious exceptions, such as the foul condition of the stream that flows through Elberfeld-Barmen and takes the discharge of waste from the chemical factories; but for the most part conditions in the large industrial districts have been enormously improved of late years. In many they approach the ideal. Not a few of the ideas of sewage disposal now being promulgated in the United States and England, including the celebrated Emscher or Imhoff tank systems, originated in the needs of German manufacturing centers.

#### Houses for Employees

In nothing, however, are manufacturers showing more solid, common sense than in their attitude, throughout the German empire, toward housing facilities for their employees, with consequent promotion of health and working efficiency. The early Krupp experiments at Essen, which most Americans have heard of and still believe represent German manufacturers' ideals of raising the living conditions of workers, belong to a bygone era. The model apartment houses and cottages erected at Essen were rented to men with families or occupied by pensioners of the Fr. Krupp Aktien Gesellschaft. Other large steel or textile mill operators, machinery builders, etc., followed suit, until the manufacturing cities and towns of the empire seemed in a fair way to be extended almost wholly along similar lines. As about 200,000 persons are dependent upon the wages paid at the various Krupp plants alone, it will be readily seen what a great impulse was given to the movement by the policy of that company.

These "model" dwellings, however, were never quite satisfactory to the working population, and their influence on industry was not of the best. To some extent it has been quite the reverse. In the first place, their uniformity and monotony of appearance and the rules by which they were hedged about appear to have pallied on even the phlegmatic Teuton workmen. The first construction of dwellings on a lavish scale was under Alfred Krupp, the son of the founder of the works. He was pre-eminently an engineer, and the communities were laid out with mathematical accuracy in every line. There was the same number of windows in each dwelling of the same class; the stone, brick and woodwork was exactly alike, and



even the few shade trees looked like a line of grenadiers on parade. Since then this arrangement has been greatly modified and improved; but the machine-like precision in everything pertaining to the daily life of the employees and their families never has been effaced. There is, therefore, small cause for wonder that those for whom these philanthropic schemes were intended soon began to manifest their ingratitude, even to the extent of preferring to live in hovels or crowded tenements rather than be governed by the conditions of their employers' bounty. Human nature has never changed.

#### Building and Loan Associations

Then it was, not many years ago, that manufacturers began to encourage the formation among the workmen themselves of mutual building and loan associations, with almost immediate success. All through the busy valleys of the Rhine and its tributaries, around Berlin, in Saxony and among the rapidly growing cities of South Germany the savings of the working classes have gone largely into mutual organizations for the erection of neat, comfortable cottages or sanitary apartment houses, which may be either purchased on easy terms or rented at very low monthly rates. So important have these societies of industrial workers become that they are now receiving, in many districts, direct support from the local governmental authorities; and manufacturers or wealthy philanthropists who take an active interest in welfare work recognize in them the best means of effectively helping the laboring classes by aiding the latter to help themselves. The societies, therefore, find little difficulty in securing enough funds for all of the operations within their scope. This "mutual benefit" movement has also been expended in numerous other directions, concerning which there will not be space to tell here, and now embraces more than half the population of the German empire.

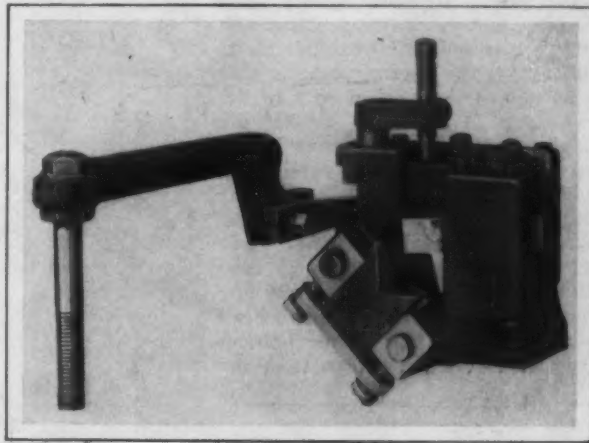
Various employers, particularly those who have built new works outside of cities, are still interested in the direct founding of workmen's "colonies," but they use discretion and taste in the erection of dwellings. One such settlement, for example, which has been laid out by the Augsburg-Nürnberg management, quoted at the beginning of this article, bears the appearance of having developed naturally according to the tastes and financial condition of the different inhabitants, except that everything harmonizes. There is nothing of the contract-built look of Pullman about it. This illustrates a modern development of the original Essen idea which appears to have been successful in a number of places; but the other plan above mentioned gives the best general results.

The ramifications of welfare work in Germany are almost innumerable. Employers support or contribute to funds for disability, illness, accident and old-age insurance, as prescribed by the laws of the empire, and also voluntarily to savings banks, maintenance of widows and orphans, libraries, amusements, night schools, industrial education, gymnasiums, etc. Furthermore, they give their time, money and energies freely to the improvement and good government of the communities in which their plants are situated, making them pleasant, comfortable, healthful places in which to live. This helps to attract and retain the best classes of labor, not only from Germany, but also from surrounding countries. The population of Düsseldorf, for example, has been collected from all north Europe.

Aside from the regulations imposed by the government, there is probably nothing in the welfare work of Germany that one cannot find duplicated many times over in this country; but in Germany practices such as those described, and others relating to prevention of accidents, etc., are becoming almost universal; whereas in the United States they are scattered and spasmodic. Furthermore, a policy once determined upon is steadily and consistently developed. In it all one thought seems to be uppermost, viz.: to increase the efficiency of the workers, both individually and en masse, to the end that the hold of the empire upon the trade of the world may be still further strengthened and its commerce enlarged. For this, bodily health and vigor are considered the primary requisite, so far as the laboring classes are concerned. Therefore, all welfare work centers in that idea.

#### New Acme Taper Turning Tool

A taper turning tool which is radically different in its operation from those now on the market has been brought out by the Acme Machine Tool Company, 2235 Buck street, Cincinnati, Ohio. The taper bar in this new tool forces the cutter out from the center of the bar, an arrangement which, it is pointed out, insures the turning of a regular taper. This action is exactly the opposite to that of the ordinary taper turning tool, in which a spring is employed to force the tool against the taper bar and no



A New Type of Tool for Turning Tapers Made by the Acme Machine Tool Company, Cincinnati, Ohio

provision is made to prevent it from gouging into the work. The construction of this new tool, it is emphasized, eliminates the trouble previously encountered from the tool gouging into the work, as this action is prevented.

In the new tool the pressure of the cut and a small spring hold the tool down firmly against the taper guide. The cutter is mounted on a vertical slide which is connected by a long adjusting screw to the L shaped piece engaging with the taper bar. This bar is kept in position by a bolt screwed into the head cap of the machine. The back rests precede the tool and work against the straight diameter of the work.

**Concrete Pile Contracts.**—Among the recent contracts for pile foundations awarded to the MacArthur Concrete Pile & Foundation Company, 11 Pine street, New York City, are those for a manufacturing building for Hammond-Standish, Saginaw, Mich.; a warehouse building for the Oliver Chilled Plow Works, Ltd., of Canada, at Hamilton, Ontario, and for the \$750,000 Fulton County court house at Atlanta, Ga. In the foundation for this last structure more than 1200 pedestal concrete piles will be driven. The contract for the warehouse at Hamilton is the second which has been awarded to this company by the Oliver Chilled Plow Works.

The annual meeting and dinner of the New York and New Jersey Branch of the National Metal Trades Association will be held the evening of Saturday, February 3, at the Engineers' Club, 32 West Fortieth street, New York City. The dinner will be served at 6.30 and followed by reports of officers and addresses on subjects of interest to the members of the branch. Members are at liberty to invite guests, and the advisory committee suggests that they invite manufacturers who may be interested in the branch and its work.

The Imperial Clock Company, whose plant was recently removed to St. Louis, Mo., has elected Peter H. Huck president, R. W. Lanning vice-president, R. E. Hayes secretary and treasurer, Joseph R. Steis and H. Groom directors, in addition to the officers.

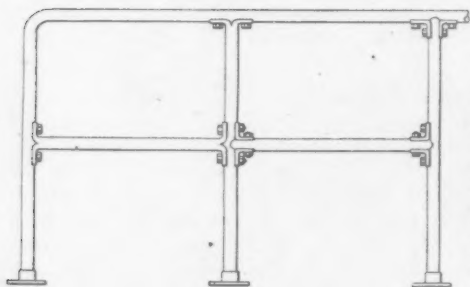
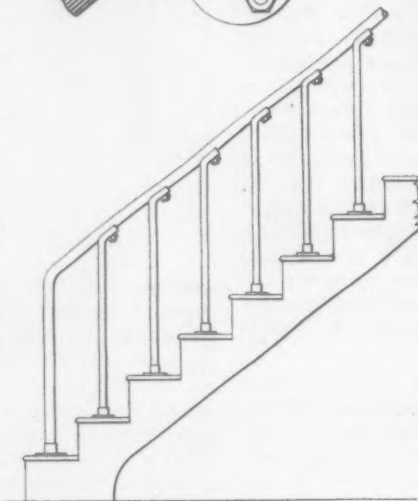
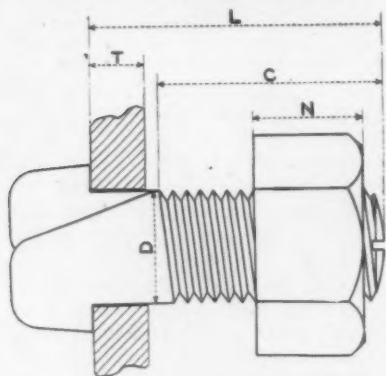
The Hall & Brown Wood Working Machinery Company, St. Louis, Mo., has elected Charles S. Brown, John S. Judd, William Woltering, John Yerkes and Alfred W. Brown directors. The officers to be elected later will be headed by Charles S. Brown as president.

## A New Bolt for Metal Construction

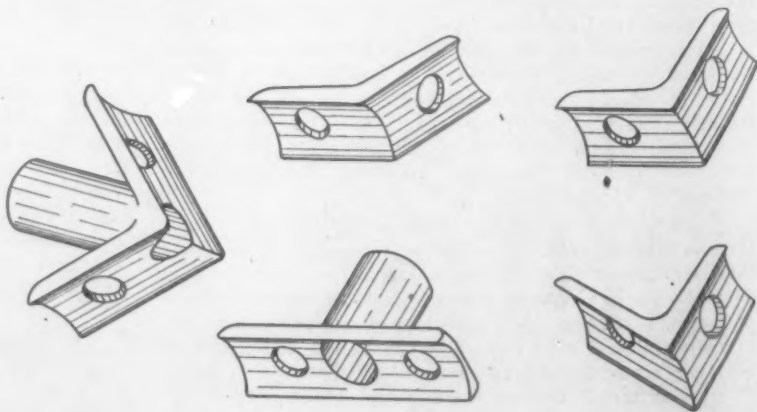
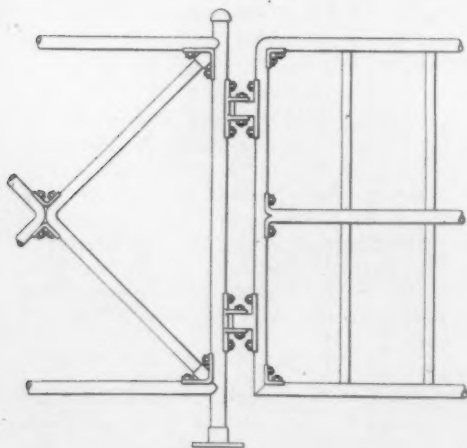
A remarkable bolt in respect to its commercial promise and its simplicity of application for fastening together metal members and for general use in assembling metal parts has been developed by the Kling Bolt Company, 42 Broadway, New York City. While the company is named after the inventor of the bolt, incidentally it is a coincidence that the name is quite descriptive of the object of the device. Briefly described the bolt is threaded and takes a nut like the ordinary bolt, but consists of two parts placed together in the same manner that an ordinary bolt would be were it split in two parts along the axis. The special point is that a portion of the head of each of the two parts is cut away so that the head of each half part may be inserted in the hole left to receive the bolt, which hole is, of course, of the diameter of the bolt stem. The accompanying illustrations will serve to indicate the points of construction, and it may merely be stated that in inserting the two head portions of the bolt in the hole in the metal work the two parts of the

to use it in places where it would be difficult or impossible to insert the bolt, as from the far side of the metal construction to be assembled. For example, in the construction of steel railroad cars, there are points where bolting must be done where it is difficult to insert a bolt owing to too limited space for reaching the hole from an inside position. With the present device the bolt may be inserted from the convenient point outside and the nut attached within a minimum of time.

It is not the intention to outline the various usages to which the bolt may be put. The illustrations are intended to assist in this direction. It will be noted how it can be applied to the assembling of pipe members in making railings, gates, and the like. A hole of sufficient size to receive the diameter of the bolt is all that is necessary, the bolt being inserted from the outside. Incidentally portions of pipe fittings may be employed to make connecting members in such work, or a piece of the pipe itself may be spread on the ends and bent to fit adjacent pipe supports. Other interesting applications shown



Kling Bolt and Some of Its Applications. The letters on the sketch of the bolt itself indicate what must be known in selecting the style and size: L, is length of bolt required; T, is thickness of metal through which head passes; C, is length of thread required; D, is diameter of bolt; N, is style of nut wanted.



stem have a relation to each other similar to the parts of a pair of scissors in the spread position. Once in the hole the threaded parts are brought together for admitting the nut and the head ends then spread so that their projections form the support against which the tension in the bolt is set up through screwing on the nut.

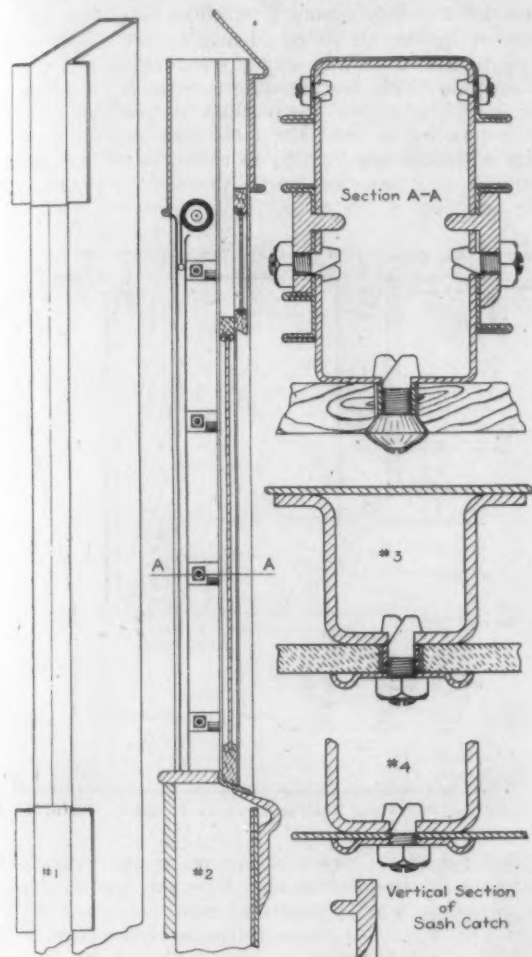
The special object of the bolt is, of course, the chance

are the bolting of angle bars, brackets and the like in supporting beams to columns, for supporting floors, hangers for shafting, etc.

The bolt is made in an extended range of standard sizes. In the very smallest sizes, where desirable, the two parts of the bolt are fastened together on a dowel pin, thus avoiding the annoyance of losing one half of the bolt, par-



ticularly where the length of the bolt is very short. It is obvious that changes and repairs with the use of this bolt do not involve cutting rivets with the danger of disfiguring or destroying the work. A point on which considerable



Application of Bolt to Metal Car Construction

emphasis is also placed is that the bolt allows for the use of tubular construction instead of rectangular members, and this from a structural standpoint means, other things being equal, that lighter or stronger sections are available. In the case of the pipe work, as the members need not be joined by threaded connections, lighter piping can be used than would otherwise be the case.

### The Shuster Wire Straightener

Another development of the automatic wire straighteners and cutters built by the F. B. Shuster Company, New Haven, Conn., has been placed on the market. The special feature of this machine is the continuous feed. The em-

features of the machine are a new type of clutch trip and the employment of heavier construction.

The general construction of the machine is the same as the company's other models with the exception that it is heavier. The general plan and operation of the machine are also standard. It is claimed for this straightener and cutter that it can be used on gold, silver, brass, cold drawn or rough wire stock with equally satisfactory results as regard straightness of the finished product and accuracy of length. The length of the arbor and its bearings has been increased. End thrust bearings are fitted to the arbor, which provide oscillation for the arbor while the cutting operation is being performed. Another special feature is the clutch trip. This is controlled by the handle shown on the front of the machine and brings the cutting mechanism directly under the hand of the operator.

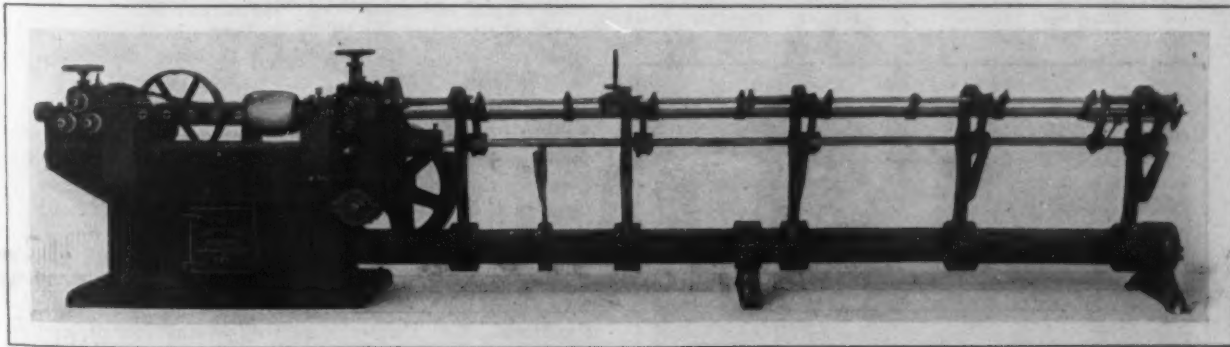
The three-roll back rough straightener is the same as that employed on former models except that it has double grooved feed rolls, the same as the front ones. A chain running over a pair of sprockets connects the front and the back feed rolls. As the name implies the function of this part is to straighten the material before it enters the rotary arbor and the straightener is supplied only with the  $\frac{1}{2}$ -in. and larger sizes, the smaller machines not requiring such a device. The machine illustrated is what is known as the  $\frac{5}{8}$ -in. size and is designed for handling  $\frac{5}{8}$ -in. and smaller wire and cutting off pieces to a maximum length of 12 ft. These machines are, however, built along the same lines for handling all sizes and for cutting to any length that may be required.

### German Pig Iron Production in 1911

Our Berlin correspondent says: "The growing activity of the German iron trade is manifested in the December pig-iron statistics, which show the largest production ever recorded for any one month. It amounted to 1,377,637 metric tons, which compares with 1,313,896 tons in November and 1,307,084 tons in December, 1910. Production for the year amounted to 15,524,223 tons, comparing with 14,793,325 tons for 1910 and 12,917,653 tons for 1909. January is expected to create another high record, as some three or four large furnaces have been blown in this month."

**Correction.**—In the description of the large electrically operated valves recently furnished by the Chapman Valve Mfg. Company, Indian Orchard, Mass., to the Ontario Power Company, which appeared in *The Iron Age* January 18 on page 198, the weight of these valves was erroneously given as 13,000 lb. It should have been 130,000 lb., as is evident when the extreme size of the valves is taken into consideration.

The Equitable building in New York, which was destroyed by fire January 9, was not protected by a regularly equipped Underwriter fire pump arranged to be under steam night and day to meet an emergency of fire. The building did have paraphernalia to fight fire—hose, fire nozzles and water tank with poorly equipped fire pump in the cellar, but as soon as the supply of water in the tank was exhausted the building was at the mercy of the flames. Had



The New Continuous Feed Automatic Wire Straightener and Cutter Built by the F. B. Shuster Company, New Haven, Conn.

ployment of an arbor and specially designed dies enables coil after coil of wire to be fed through the machine without stopping it or readjusting the dies when the latter have been once adjusted for a certain size of wire. Other special

it not been for the assistance rendered by the neighboring buildings, all of which had Worthington fire pumps, it is more than probable that the fire would have wiped out a considerable section of the congested downtown district.

## A New Mumford Valve

### A Recent Development for Jolt Ramming Machines

The Mumford Molding Machine Company, Plainfield, N. J., has recently developed a new type of valve for use on its jolt ramming machines. This valve is intended to do away with the necessity for changing the stroke of the machine when different kinds of work are being handled. In the new valve the stroke does not vary, having been made long enough to ram the most difficult mold and then by varying the back pressure on the plunger the blow is modified to give the lightest blows needed. Fig. 1 shows the valve applied to one of the maker's standard 24-in.

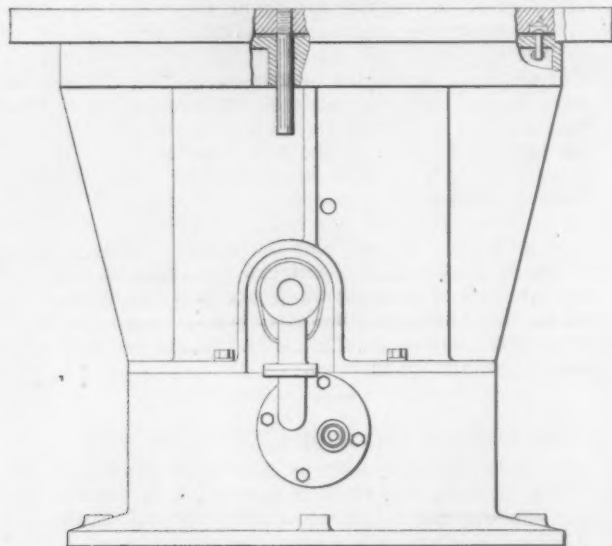


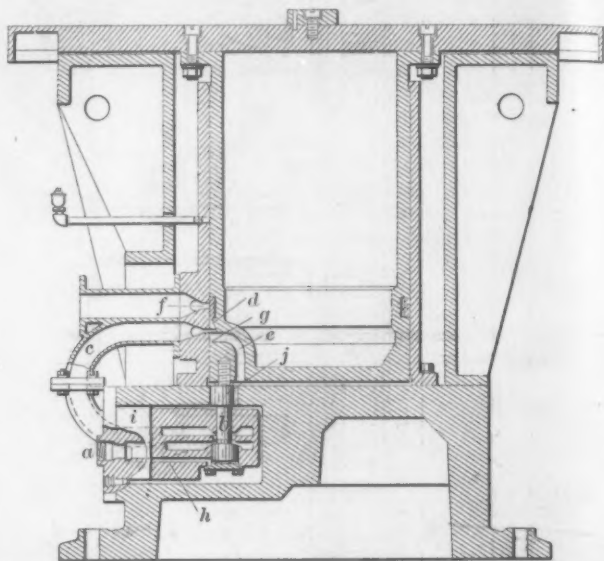
Fig. 1—Details of a New Valve for Jolt Ramming Molding Machines

jolt ramming machines having a table 72 in. square and sufficient capacity to ram molds weighing 12 tons. Fig. 2 illustrates the valve applied to a machine located in a core bench and operated by a knee pad.

Referring to Fig. 1, which gives the details of the valve, the operation will be understood from the following description: The air entering at *a* from the 2-in. supply pipe passes around the stem of the valve *b* to the bent tube *c*. From this point it enters the space at the side of the main plunger *d* and, passing through the port *e*, it reaches the cylinder and raises the plunger and the mold table. As the lower edge of the packing ring on the main plunger uncovers the exhaust port *f*, which connects with a 3-in. exhaust pipe, the rising shoulder *g* of the main plunger cuts off the entering air. With the exhaust port open and the inlet port blocked, the pressure rapidly decreases under the main plunger and, as the table is falling to give the impact to the mold, the valve *b* blows up into the reduced pressure space in the cylinder and cuts off the entering air positively. The pressure which forces this valve up is that of the supply line introduced through the by-pass *h*, and this pressure keeps the valve *b* up with the air cut off until just before the instant of impact, when the projecting part *j* of the main plunger forces the valve

*b* open and readmits air for the next blow. While the working of this valve is both simple and positive, it is mounted on a readily removable plug, *i*, so that even unforeseen accidents can be guarded against.

From the foregoing description it will be seen that the valve of this jolt ramming machine is unique and it is actuated by the air independently of the velocity of the rising table without imposing any burden upon the entering air column. This feature differentiates it from the other valves which require the machine to possess enough reserve capacity to send the table past the valve-throwing point with sufficient velocity to complete the operation and not stall with the valve partly thrown. It is also pointed



Made by the Mumford Molding Machine Company, Plainfield, N. J.

out that the total absence of springs in the valve or anywhere else in the machine eliminates the source of trouble that is present wherever springs occur.

In Fig. 2 one of these valves is shown applied to a machine which is set in a core bench and has the valve operated by a knee pad.

## Wrought Pipe Experience in Refrigerating Work

The National Tube Company, Frick Building, Pittsburgh, Pa., has reprinted in pamphlet form the paper by P. DeC. Ball, St. Louis, Mo., on "Steel Pipe versus Wrought Iron Pipe in Refrigerating Work," which was read at the American Society of Refrigerating Engineers held in St. Louis, October 2 and 3, 1911. This paper deals with Mr. Ball's personal experience with steel pipe and wrought iron pipe in refrigerating plants. It is a strong presentation in favor of steel pipe for this special use. An interesting statement made by the author was that he had some time previously taken down, moved and rebuilt an open-air ammonia condenser which had been in operation 14 years and which was made of steel pipe, full card weight, not galvanized. He says: "The pipe was in absolutely perfect condition, neither pitted nor corroded at all; in fact, looked as good as after the first three months' run."

The Follansbee Brothers Company, Pittsburgh, Pa., made several changes in its traveling force at the beginning of the year. The company is now represented in western Illinois, Iowa and Nebraska by W. R. Messick; in the New England States by F. A. Barrows, and in Virginia and North and South Carolina by William L. Hunter. Messrs. Messick and Barrows have traveled in the sections mentioned for a sufficient time to become well known to the trade. Mr. Hunter was for several years connected with the company's general office, having formerly been its city salesman.

Frank C. Roberts & Co., Philadelphia, are consulting engineers for the blast furnace plant to be built by the Oriskany Ore & Iron Corporation near Lynchburg, Va.

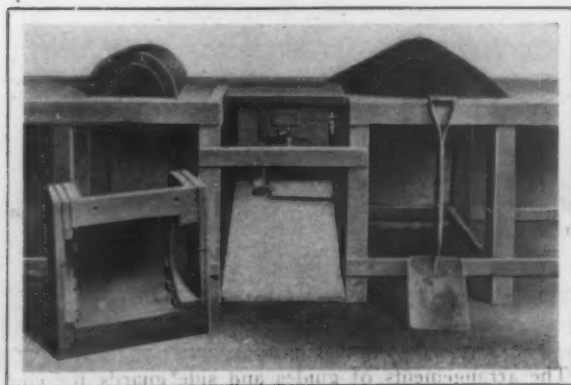


Fig. 2—The Valve Applied to a Machine Set in a Core Bench and Controlled by the Operator's Knee



## Guide Arrangements for Small Merchant Mills

An illustrated article in *Stahl und Eisen*, by Herr Munker, deals with guides for mills rolling small angles up to 1.77 in. flats, strips, small tees, rounds and squares from 0.27 to 1.18 in. and special small sections. For rolling these sections, either three-high or double two-high mills are used in Germany, from 9.8-in. to 13.4-in. pitch diameter. For roughing continuous mills or ordinary three-high mills are used with rolls from 15.7-in. to 19.7-in. pitch diameter. For small sizes of tool steel no special roughing mill is generally employed, the billets being rolled in the first stand or stands of rolls.

The choice between three-high or double two-high mills, with or without special roughing trains, depends

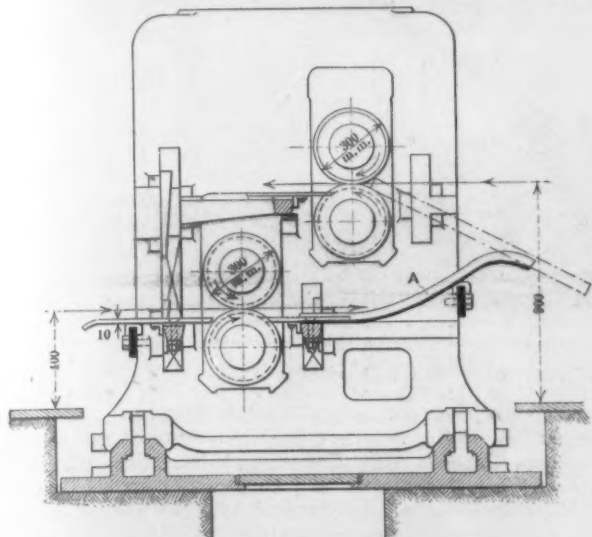


Fig. 1—Double Two-High Mill. 11.8-In. Pitch Diameter

upon the desired amount of output as well as the kind of material. If only simple shapes are to be rolled, such as rounds or squares, then a three-high mill is usually chosen with a fixed central roll, the material being passed from one stand to the other either automatically or by hand. The upper and lower rolls are then alternately blind rolls, and therefore each stand works only like a two-high mill. Double two-high mills would not be suitable in such a case, as one pair in each stand would be left idle.

For angles, simple tees, small channels, hexagons and strips, as well as special shapes, the double two-high mill is to be preferred, as it gives a much more exact final product. Also double the number of passes per stand can be made, compared with a three-high mill of the same

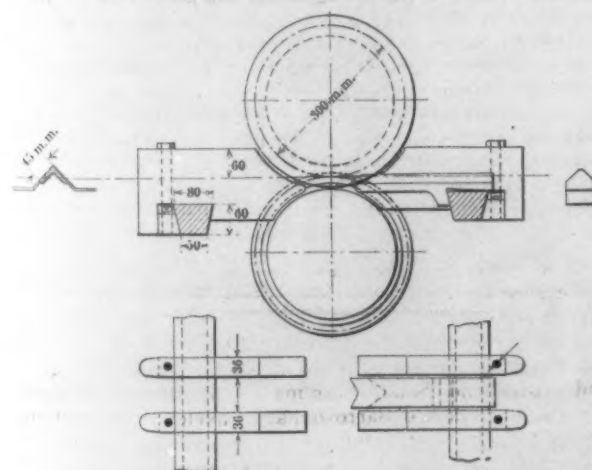


Fig. 2—Arrangement for Small Angles

size, for both pairs of rolls are completely independent of each other. Further, the sections are not rolled continuously but backwards and forwards. For these reasons this arrangement is also the most suitable for tool steels.

In the original paper the guide arrangement for an ordinary three-high mills is first shown, which presents no feature of special interest. Next comes a double two-high mill, which is shown in Fig. 1, with rolls 11.8-in. pitch diameter. It is used as the roughing stand of the double

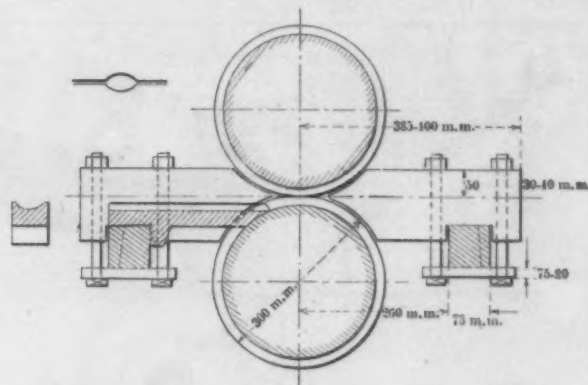


Fig. 3—Arrangement for Ovals, with Simple Square Rest Bar

two-high train, and has exactly the same measurements as the remaining stands. In this way the parts are changeable, which considerably reduces the necessary spares. It will be noticed that the plate A is curved upwards, so that the bar is easily raised from the lower to the upper passes. In such a mill 3.15-in. billets can be easily rolled. It is much used for special steels and has given very favorable results.

Fig. 2 shows the guide arrangement for small angles. It is of interest because of the fastening used for the side guards, which is practical and very much liked in the mills. It can be easily loosened, the side guards changed

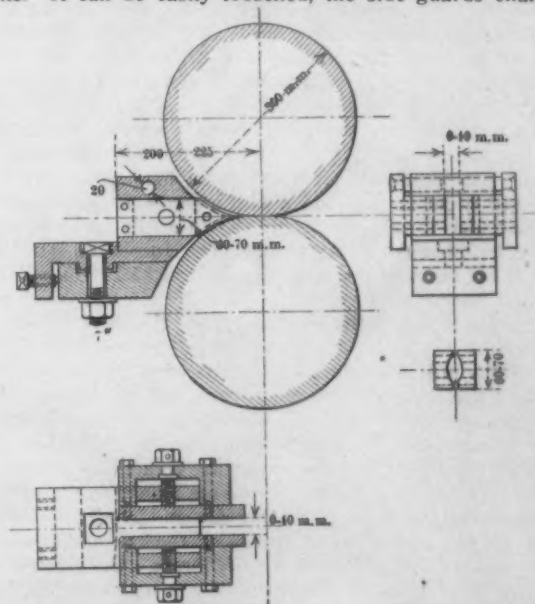


Fig. 4—Changeable Guide for Flats, Ovals and Edging Passes

and again tightened. The conical rest bar can be replaced by cheaper square ones, made out of smooth, carefully rolled stock, as is shown in Fig. 3. One disadvantage, however, is that the stripping plate is not so firmly fixed.

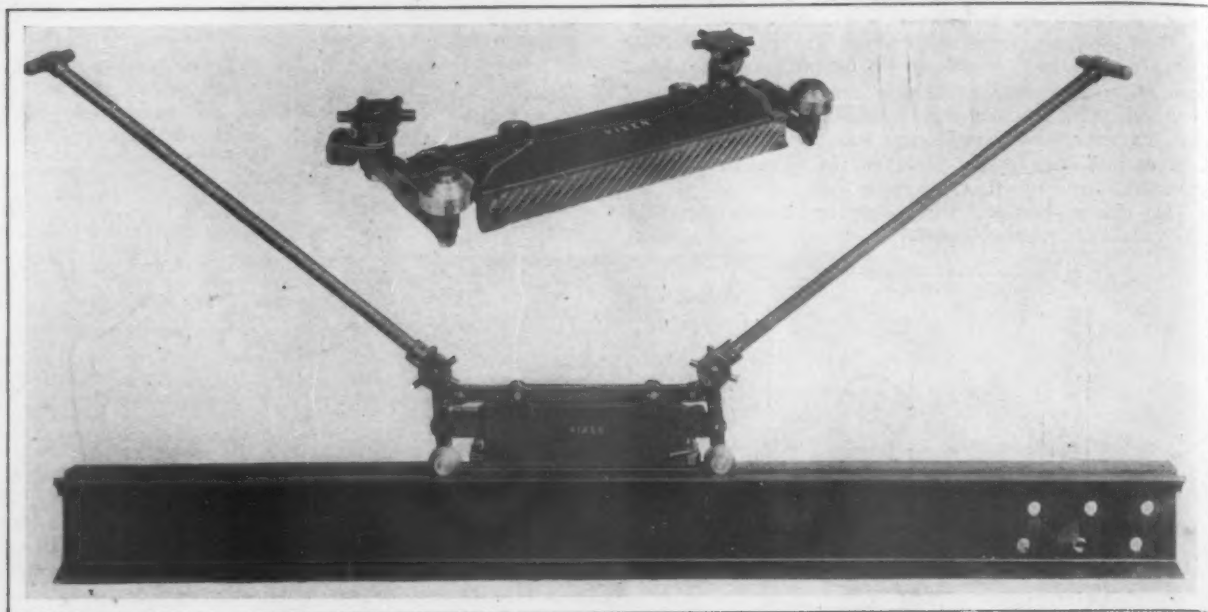
In Fig. 4 is shown an arrangement that is very practical and can be quickly altered for various sizes. The illustration is so plain that it does not need description. For mills rolling special steels such an arrangement is largely used and is to be recommended. When rolling tool steels, steel side guards are employed, smoothly machined and then hardened.

With regard to the side guards for shapes, it may be said that both sides are usually prepared, especially with the small sizes, so that they can be turned around when one side is worn. This helps to save material, which in general is rather expensive.

The arrangements of guides and side guards for edging passes, for step rolls and for small tees are also shown, and the article closes with reference to the necessity of smooth and well fitting pass guides. G. B. W.

## The Vixen Rail Planer

For straightening out raised and cupped joints and corrugations of every description occurring in rails, the Vixen Tool Company, 5001 Lancaster avenue, Philadelphia, Pa.,



A New Type of Rail Planer Built by the Vixen Tool Company, Philadelphia, Pa.

has brought out a rail planer. This planer is a portable cast-iron and steel holder to which is attached a standard Vixen file. The special features of this machine are simplicity of construction, low cost of operation, durability, ease of handling, adaptability for all types of rails and ability to remove a large amount of metal in a short time. The holder is shown in position on a rail in the lower part of the accompanying engraving, while a view of the holder and the bottom of the file is given in the upper portion.

The file employed is made from a high grade crucible steel and is cut on both sides with a series of deep teeth in semi-circular form as is clearly shown at the upper portion of the accompanying engraving. The formation of these teeth is the same as the maker's standard file. It is pointed out that instead of forming the teeth by a blow, which has a tendency to injure the steel and make the teeth defective, the teeth of the Vixen file are cut one at a time with an end mill. This mill is made in the shape of a hollow cylinder having a diameter of from  $2\frac{1}{2}$  to 3 in. and the edge beveled off at an angle of 60 deg. In cutting the file teeth the mill is set at an angle of  $1\frac{1}{2}$  deg. with a line at right angles to the plane of the file and the cutters are rotated by automatic machines which feed them into the file blanks to the proper depth, withdraw them, index the file and repeat.

In use the planer is put on top of the rail and is alternately pushed and pulled by two laborers. On account of its light weight, 135 lb., the machine can be easily handled. In operation the file is automatically raised from the rail on the backward stroke and lowered sufficiently on the forward one to engage the rail. This feature is made possible by the construction of the holder and this prevents unnecessary wear on the file teeth on the backward stroke while the weight of the device is employed on the forward stroke to utilize to the fullest extent the cutting edges of the file. After the file has become dulled from use it can be resharpened about four times, the number depending entirely on how much the teeth have been worn after they became dull. This planer it is claimed is equally well adapted for all types of joints whether welded or mechanically fastened and is especially adapted to subway work where the space is very much limited. When used for this class of work it is pointed out that it does not tie up traffic or place a section of the line out of commission while it is in operation and, as it does not require electric power, no expensive portable switches are necessary.

The Central Wire & Iron Company, Cleveland, Ohio, has changed its name to the McLaren Iron Works Company. Guy N. McLaren is president and Archibald McLaren is secretary.

## A New Positive Pressure Blower

A positive pressure blower of a notable design, in that it consists wholly of one casing, two heads, one drum, two, three or four vanes depending upon the size of the blower,

and sliding shoes or rollers in each head for supporting the blades of the impellers, has been brought out by the National Cable & Mfg. Company, Niles, Mich. An idea of the general character and construction of the blower is illustrated in the accompanying reproduction of a photograph. It is emphasized that the blower is the result of 20 years' experience in the manufacture of positive pressure blowers, and that there are no gears, thus minimizing friction. The blower is intended for operation at low speed, minimizing the power required to run the blower, and the small number of parts are calculated to mean minimum noise in operation, minimum attention and minimum wear.



Duplex Positive Pressure Blower

The blower is intended for use with welding forges, assaying furnaces, blast blow-pipes, gas forges, brazing hearths, hardening furnaces, tempering furnaces, and the tinning bath for wire. The picture is a view of the No.  $\frac{1}{2}$  blower, which provides for intake and outlet openings of 6 in. and is operated ordinarily at a speed of 175 r.p.m. and is rated to deliver 416 cu. ft. of air per minute, demanding  $2\frac{1}{2}$  hp. for delivering at a pressure of 1 lb. per square inch and 10 hp. for delivering at a pressure of 5 lb. per square inch. The blowers of this general type made by the company range in size of inlet and outlet from 1 to 16 in. in diameter with capacities of 20 to 4000 cu. ft. of air delivered per minute.

The Taft-Peirce Mfg. Company, Woonsocket, R. I., has established a Chicago office at 1038 National Life Building, with A. H. Mitchel in charge, to handle inquiries in connection with the manufacture of light high-grade machinery, the redesigning of machines for economical manufacture, and the design and construction of special tools and machinery.



## The Natco Multiple-Spindle Drill

A recent addition to the Natco line of multiple-spindle drills built by the National Automatic Tool Company, Richmond, Ind., is a smaller size of tool known as the type M-1. This new tool has been built to meet the demand for a small size of drill which embodies the builder's patented feature of independently changeable spindle speeds. This makes it possible to use different sizes of drills at the same time and yet have each operate at approximately the correct cutting speed. Another special feature of the drill is the rigidity and simplicity of its construction. Fig. 1 is a view of the drill, while details of the universal joint and the drilling head are given in Fig. 2.

It will be noticed by referring to Fig. 1 that the shafts on the top of the head are in different positions which correspond to those of the spindle gears inside the head. At the right of Fig. 2 is a sectional view of the head used on this drill. The shaft in the center shows the spindle gear in slow speed, while on those immediately adjacent this gear is in a neutral position. On the other shaft the gear is in the high-speed position and shows clearly how it is possible to vary the speed of any spindle independently of that of any other, an arrangement which makes it possible to drill in one operation pieces which formerly required two or more operations to complete on a single-speed tool. These machines are built with either square or rectangular heads, the former covering an area  $9\frac{1}{2}$  in. square, while that of the other measures  $12 \times 8$  in. Both types have adjustable steel rails, the square-head machine having a capacity of ten  $\frac{5}{16}$ -in. drills, or their equivalent, while the capacity of the rectangular head is six more. The center distances which can be obtained are  $\frac{11}{16}$  and  $\frac{13}{16}$  in., depending upon the size of the holes to be

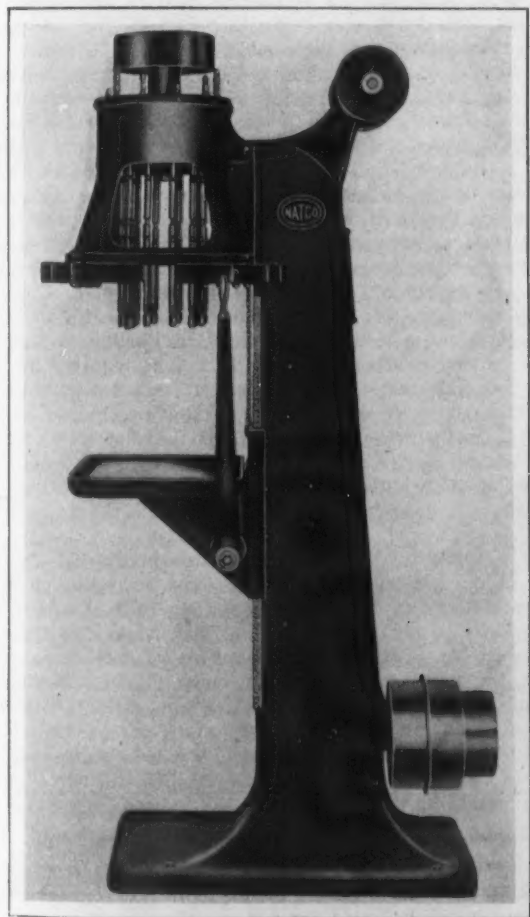


Fig. 1—The Type M-1 Multiple-Spindle Drilling Machine with Independently Adjustable Spindle Speeds Built by the National Automatic Tool Company, Richmond, Ind.

drilled. The universal joints used at the head are shown in detail at the left of Fig. 2. These joints are said to be of different construction from the others now on the market, and the pins on the driving block instead of being of the usual inserted type are milled from the solid. The use

of this kind of pin, together with the employment of hardened wearing surface, it is pointed out, gives a strong and dependable joint.

The adjustable steel rails supplied with the head are bronze bushed and are provided with ball-thrust bearings,

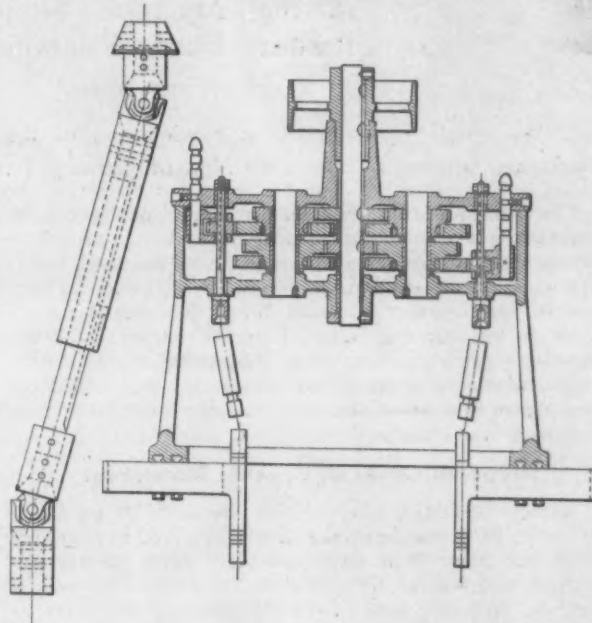


Fig. 2—Details of the Universal Joint and the Head

an adjustment to compensate for wear and ample lubricating facilities. In changing the machine from drilling one piece to another, adjustments over the entire range of the tool are made quickly. For holding the drills spring collets made from a special grade of spring steel are used. A hexagonal spindle cap screwed on the end of the spindle grips the drill. When only a portion of the drills are being used those not in service can be easily thrown out of position while the machine is running by raising or lowering the spindle gears to the neutral position.

Both single or double speeds can be supplied for the spindles, but the latter are used almost exclusively on account of the numerous advantages possessed by this type of machine. All the gears in the machine are cut from the solid forgings, no cast-iron gears being used, and all those at the head run in a continuous oil bath, the head casting acting as an oil reservoir. Ball bearings are employed between the gears and all the bearings are bushed with a special grade of phosphor bronze. The table, which has a planed surface  $10\frac{3}{4} \times 14$  in. and an over-all surface of  $14 \times 18$  in. in the smaller machines and surfaces of  $13 \times 21$  and  $16\frac{3}{16} \times 25$  in. in the larger one, is counterbalanced and has a large bearing surface on the column with an adjusting gib to compensate for wear. The oil groove around the table is finished level with the top so that a larger working surface for handling the work and the jigs, etc., is obtained. If desired, T slots for clamping jigs or work to the table can be supplied.

Either hand or power feed can be furnished for the table and the stops are located on the sides of the column for drilling holes to a certain depth. For the power feed an automatic throw-out is furnished, which trips the feed when the proper depth of hole has been drilled. The distance between the top of the table and the bottom of the largest spindle is  $21\frac{1}{2}$  in. The over-all height of the drill is 80 in., and the net weight is approximately 1000 lb.

The Thorp Iron Company, a new incorporation with a capital stock of \$30,000, has established its general offices and plant at 626-628 West Twenty-fourth street, New York City, and will conduct a business in structural steel and ornamental iron. The combination of offices and shops will enable the company to contract for furnishing and erecting structural steel and ornamental work required in general building construction with satisfactory deliveries and execution of contracts. Charles H. Parsons is president and Winfield S. Thorp is treasurer and general manager.

# The Watertown Arsenal Labor Trouble

## The Testimony Regarding the Methods Employed in the Machine Shop—Efficient Management Rather Than Scientific Management Needed

BY MAX H. C. BROMBACHER\*

This article is practically a continuation of the article by the same author on the same general subject which was printed in *The Iron Age* of January 11, beginning on page 165.

The witnesses from the arsenal machine shop who gave testimony before the Congressional Committee in regard to the workings of the system of shop management in vogue there comprised machinists Jennings, Cheney, Burns, Foreman McKean, former Foreman North, who had been assigned to the planning room; Foreman Barker, Foreman Crawford, screw machine hand Regan, machinist White, Master Mechanic Nelson and time-study man Merrick. They appeared in about the order named so far as the machine shop was concerned.

### Injudicious Claims for Scientific Management

Witness Jennings, after voicing the usual objection of mechanics to "scientific management," referred to a subject which has more than once provoked mirth among the skeptical and caused the judicious to grieve; he quoted from the literature issued by some efficiency engineers to the effect that, under their system, it was not necessary to possess any extraordinary ability; it was merely necessary for the operative to become a part of the system, and the system would do the rest. He made the statement that the public press quoted one efficiency engineer as making an address at Harvard, wherein he had claimed that his system "could be successfully prosecuted with the assistance of apes and gorillas."

It was evident that the witness thought that Mr. Taylor was the author of these statements, but a question from Mr. Taylor addressed to the witness elicited that he did not know his name, but that both statements had been made in the course of the address at Harvard, and had been quoted by the public press. So far as the writer's memory serves, he knows of no address at Harvard by Mr. Taylor, though he may have made addresses to some Harvard club, and he does not believe that Mr. Taylor said any such thing. At the same time, it is the subject of common remark among those who have had the subject of scientific management brought before them, and who have discussed it with others, operatives included, that the cause of increased efficiency in shop management would be decidedly further advanced to-day had some of these gems of thought which one finds in the literature of scientific management never been thought of, or, at the very least, never been printed. The least offensive of these thoughts show that the writers, through concentration upon the beauties of the abstract theory underlying their systems, seem to have lost a due sense of the humanities; their views seem to have been conceived and written along the lines of the operatives being mere penitentiary numbers, so to speak, instead of human beings with feelings and thoughts.

### Charge of Disrating Operatives Not Sustained

It was Mr. Jennings's opinion that the installation of the system had, along these lines (no particular skill required), already resulted in the disrating of some of the operatives at the arsenal. It may be said here that no testimony of specific instances of this sort of thing was offered. It seems self-evident that any system of shop management which is at all educational, either in scope or effect, is bound to result, at least to some extent, in the raising of the rating of some operatives who have improved in skill, but this is quite different from causing the disrating, in any fair sense, of operatives. The writer has already said that the system of minimum and limit time, taken in connection with the obvious fact that the officials were uncertain of the correctness of their time studies, as evinced by their reiteration of intention to keep on revising until they were satisfied that their time studies were right, generated a justified suspicion in the minds of the operatives that the

only seeming certainty was a declining tendency as regarded their earnings. But this, also, is very different from the system's causing a disrating through the rating upward of operatives improving in skill as a result of the system.

### A Witness Who Gave Amazing Testimony

The next witness, Mr. Cheney, gave testimony of much greater importance than that of Mr. Jennings, but it strikes one as being of the kind which, in the public press, is generally found under the heading "important if true." He gave some testimony which reflected on the extreme fallibility of the time-study man aside from reflecting upon him as a mechanic; it was to the effect that his tool was speeded up to enable him to do a job within the given time, and the job came out rough, whereas witness had done the same job with the lower speed in the same time and turned out a smooth job. His next instance was a case of speeding up his tool despite his remonstrance, and the statement that the belt flew off and the job was not passed by the inspector. He explained that the roughness on the first job was not, in itself, of great importance, since it had to go through another process in another part of the shop, but that his second job was just the reverse. The substance of his opinion was that the same speed had been prescribed for two jobs, one not needing and the other needing smooth work.

This witness's testimony contains much which is amazing. For instance, a speed being prescribed for the cutting of a thread on a bolt against his remonstrance that the thread could not be cut at that speed, his remonstrance was overridden by the time-study man, but, on account of this not being a premium job, he was authorized to disregard the order of the time-study man by Master Mechanic Nelson. His testimony touched the Taylor system directly, having reference to a Taylor countershaft which had been built according to instructions from Mr. Barth, who had in turn designed it according to the formulae required by his (Barth's) slide rule. The witness's statement was that the countershaft broke down, which, in his opinion, was accounted for by the cutting down of the diameter of the shaft because of the higher speed it was to revolve at, and that the smaller diameter of the shaft was not able to stand the strain of the extremely tight belts which the design required.

Mr. Cheney further testified to a machine breaking because of the use on it of a drill ground according to Mr. Barth's ideas; that Mr. Barth thereafter followed the witness's ideas in respect of grinding drills. As further reflecting on Mr. Barth's knowledge of his specialty (tool design), the witness testified that under Master Mechanic Nelson's instruction he had run a  $3\frac{1}{4}$ -in. drill through a piece of stock  $7\frac{1}{2}$  in. long in  $7\frac{1}{2}$  min.; after which Mr. Barth put another man on the job, doubled the speed and the feed and undertook to run a 1-in. drill through, but it could not do the work.

### Curious Omission of Immediate Cross Examination

It must be admitted that the statements of this witness lacked nothing in respect of either definiteness, importance or direct relation to the system of shop management in vogue at the arsenal machine shop, and to at least one distinctive Taylor specialty, namely, countershafts. His testimony was given in presence of the arsenal officials, as was also the case with that of witness Jennings. Why these two witnesses, but more especially Mr. Cheney, were not subjected to a thorough cross examination then and there, or, at the very least, the first thing the next day, passes the comprehension of the writer. Certainly, if the arsenal officials felt that they could riddle his testimony with the records and facts at their disposal, they could very well

\*Practical efficiency engineer, New York City.



afford to pay his wages for reappearing next day. If, on the other hand, they deemed the cross examination of an operative to be beneath the dignity of an army officer, it is to be regretted; and if they underestimated the importance of not allowing such testimony to go on the record unshaken, it would seem as though higher officials disagreed with them. They were keen enough in the cross examination of witnesses after that. As it is, so far as the record goes, Mr. Cheney's testimony stands subject to a statement later on by one of the officials that he was mistaken. This is rather mild, in view of the reference of the witness to Master Mechanic Nelson as cognizant of the same instances.

The next witness, Burns, showed a difference in time on a given job consisting of 16 or 17 pieces turned out in 53 hours and a second lot of 16 or 17 in 23 hours. He explained this difference by stating that part of the first lot had been done with low speed tools, as against high speed tools on the others, and by being shifted to premium work while the job was going through, necessitating hours of explanation about premium jobs and how the scheme worked by Mr. Barth. The officials were under the impression that he had been instructed how to cut out unnecessary movements, which the witness denied.

### An Interesting Episode on Time Study

Mr. Burns also testified that time-study man Merrick admitted that he had changed the time for doing certain jobs, and would do so again, hence he had been unwilling to double up on a bronze pinion job at Master Mechanic Nelson's suggestion to do so and make more money. Master Mechanic Nelson told the witness that time-study man Merrick would not be allowed to do this, which Major Williams confirmed, in consequence of which witness doubled up and earned a premium of \$2.49 on 22 pieces. This man found he could not earn his bonus when running three machines on a certain job, and upon Master Mechanic Nelson's discussing the matter with time-study man Merrick, the latter answered that Burns could make his bonus if he would run when changing his tools, etc. This is certainly a remarkable thing to ask a man to do in a shop; small wonder, therefore, that Mr. Nelson vetoed the proposition. The statement in reference to this matter was made by Master Mechanic Nelson, who stuck to it despite most earnest efforts by Major Williams to have him admit that he was mistaken. Mr. Merrick contented himself with the statement that "he did not remember such a conversation"; but Mr. Nelson went the length of saying that he had brought the matter to the attention of Major Williams, which the latter denied.

This was a matter of prime importance from the viewpoint of administration, yet Mr. Nelson did not view it that way. There is, seemingly, a flat contradiction between Major Williams and Mr. Nelson, but Mr. Nelson seemed to think it was a small thing. This is hard for anyone not a mechanic to understand, but is understandable by a mechanic. A reading of all the testimony will show that the foremen generally had no sort of use for Mr. Merrick, that they deemed him impractical to the last degree, and hence, when he made this comment to Mr. Nelson in regard to Burns, Mr. Nelson turned it down abruptly as being too silly to warrant another thought. But, when one considers that Mr. Nelson clung to his statement despite the fact that it constituted a grave reflection on his employers, and despite the strenuous endeavors of these employers to have him soften his testimony, one cannot but believe that Mr. Nelson was telling the truth as he saw it. The comment he made to Mr. Merrick, in turning down his suggestion, that "it would look as though there was something the matter in the shop to see a man running," confirms his statement that he thought the suggestion was not worth bringing up for a grave consultation with the officials. It is not impossible that both Mr. Nelson and Major Williams are telling the truth in the matter; Nelson reporting in an inconsequent way what to him was a minor incident, and Major Williams not giving any heed to it on that account.

### Local Conditions Must Be Considered

It would serve no useful purpose, though it might add to the value of this article as an analysis, to comment on the testimony of each witness. The writer will therefore content himself by saying that testimony was given and

seemingly corroborated to the effect that the so-called Taylor cutting tools fell down when attempted to be applied in the arsenal machine shop. This is no crime, neither does it condemn these tools as a whole. It simply shows that, with tools as with men, local conditions must be considered, and that the omission to do so presages failure.

The testimony of all the remaining witnesses in relation to the machine shop is to the effect that the shop system attempted to be applied there had its good features, which were qualified to some extent by an inherent tendency to inflexibility of application, reference being made here to routing, planning, etc. The consensus of the testimony was to the effect that, if wholly in the hands of practical men, it would be less liable to jars. In this connection, it is to be remembered that the foremen gave this testimony, some of them being members of the planning board themselves. They are unanimously opposed to the time study as generally applied; that is, by people of the class typified by Mr. Merrick.

One can also glimpse the view of these foremen when they say, as they do, that the management of the machine shop could have been improved without the importing into the arsenal of Messrs. Barth and Merrick and "scientific management." These people, even though not college bred or even high school bred, have an instinctively more correct understanding of what the words "scientific management" mean than do lots of others, efficiency engineers not excluded. They know that "scientific" means absolute, rigid in fact; hence, when they see a system that has been incorrectly or impossibly labelled "scientific" fall down in application, they laugh. They reason that if the system were really scientific it would hardly be likely to break down, since science is fact; hence, its breaking down demonstrates that it is almost anything but scientific. Apart from this, their native sense tells them that real scientific management could not possibly be applied to mechanics with success, on account of the flexibility of men, namely, live men. It should be remembered that it has been found to be a practical impossibility to apply scientific, that is fixed, rules of grammar to a language until it is a dead language.

### Preliminary Details Not Thorough

Then again, the officials omitted the trifling precaution of getting all their cards and other details in just the shape in which they wanted them to be. Every now and then, when a witness quoted the card which was handed to him in justification of something he did or omitted to do, the officials were compelled to make the very lame admission that "when we first started out our cards were not exactly as they should have been." In an atmosphere of open discontent on the part of the men such things are powerful in respect of mischief-breeding possibilities.

Similar omissions are apparent in regard to some of the appliances which fell down, as for instance the Taylor countershafts. The officials explained that the countershaft in question was a sort of composite, made at the arsenal from materials at hand. In such a case as this, when introducing a system not regarded with favor by the workman, to take the chance which such methods entail is almost criminal carelessness. Anything new in the shape of a distinctive appliance considered to be a part of a system should have been constructed, installed and applied with the utmost forethought and care. It should have been of best materials. The officials should have foreseen that a breakdown of such a thing would inevitably reflect on the system and on the intelligence of the installers thereof; outside of which it was bound to have a string of results all tending to the defeat of the system and the encouragement of the opponents of the system in the arsenal. Certainly, anyone who knew mechanics would never have been caught napping in this way; he would have known that the consequences were far too serious to take any avoidable chances. It is fairly evident that considerable soldiering was going on at the arsenal, but that evil does not require scientific management to cure it. It is also evident, from the admissions of the officials themselves, that the administration of the arsenal, as well as its equipment, had not been all it could or should have been; but this latter fact is chargeable in great part "to conditions over which the arsenal officials had little if any control."

### Arsenal Efficiency System Not Applicable Elsewhere

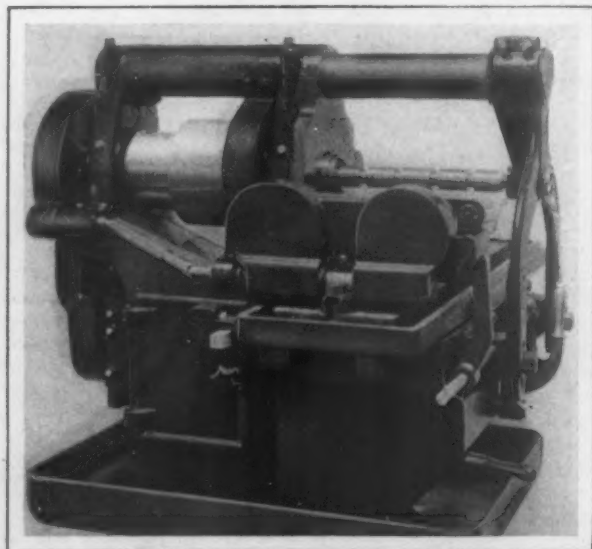
As regards the applicability of the system installed at the arsenal to railroad repair shops, it must be admitted

that the evidence distinctly negatives that idea. It is to be remembered that Mr. Gilbreth, the efficiency engineer who testified before the Interstate Commerce Commission last winter, has lately expressed the opinion that scientific management is not successfully applicable to railroad repair shops. As regarding its applicability elsewhere, it should be remembered that the Secretary of the Navy decided some months ago to discontinue it in the yards under his control. He stated that it had been found to be expensive in respect of the multiplicity of records which it entailed, and further it seemed to be provocative of trouble among the operatives. In respect of arsenals and of navy yards this does or should not mean that "efficient management" is to be condemned; it may and perhaps does mean that the methods attempted to be applied in connection with the shop management systems in arsenals and navy yards are fairly subject to these criticisms. It is the judgment of many sincere friends of efficient management that a change of methods is imperatively necessary if efficient management is not to become a mockery; that the employment of people who do not know the first thing about mechanics and their viewpoints, who know very little about the human equation generally and still less about the intimate connection of the application of the humanities with the success of efficient management, has got to cease in respect of their being employed as installers of efficient management; and, last but not least, that efficiency engineers have got to cease exalting their system or any system above the limits set by the requirements entailed in and by the practical application of their or any other system.

So far as the arsenal goes, and the report which the committee will make, all must be, in the nature of things, guesswork. Needless to say, the writer has no occult sources of information on that subject. But in the light of the evidence taken at Boston and Watertown, and in the light of the fact that the testimony at the hearings regarding the Rockford arsenal seems to indicate about the same attempt to carry out the system there, at least in respect of rigidity of application, it is not clear how a report charging the arsenal officials with injudicious methods of application as regards the system and a somewhat arbitrary treatment of the operatives can very well be avoided. In fact, it seems that a recommendation from the committee placing civilians in charge of manufacturing at both arsenals and navy yard would find considerable justification in the testimony.

### Bickford Automatic Fluter

For fluting taps, reamers and small gears, the Bickford Machine Company, Greenfield, Mass., has brought out a new automatic machine. This is of a new type and, aside from the indexing of its dividing head spindles and the table movement, both of which are entirely automatic, it possesses several distinctive features. A large pan is bolted in between the base and the machine column and catches any overflow of oil from the work and conveys it to a tank



The No. 2-A Automatic Fluting Machine for Taps, Reamers and Small Gears Built by the Bickford Machine Company, Greenfield, Mass.

in the base. The crucible steel spindle runs in special phosphor bronze bearings which are arranged to compensate for wear. The driving pulley is double back geared to the spindle and a 4-in. belt runs over it. The knee, which is of the box type, is cast solid with the saddle and is heavily gibbed to the column. It is elevated by a lever handle and pilot collar on a coarse pitch screw operating in a bronze nut. The table is of large area and has a channel of ample size to take care of the oil overflowing from the work. The table bearing in the saddle is 24 in. long and 10 in. wide. One of the special features of the machine is the combination drop arm and braces which are cast in one piece and afford a very rigid support to the cutter arbor.

The feed is of the rack and pinion type, and in addition to being of coarse pitch, one of the specially noteworthy features is the use of a crucible steel worm which meshes with a large gear on the pinion shaft, the end pressure of the worm being taken by a set of ball thrust bearings at each end. The worm turns in both directions to give both forward and reverse movements to the table and the worm shaft is driven by a train of gears so that the troubles generally encountered where a belt-driven feed is employed are said to be done away with.

Changing the direction of the table motion is accomplished by employing a gear box set into the machine column. The parts of this gear box are so arranged that a slight rolling movement of the reverse shaft engages a sliding clutch and changes the forward motion of the feed-worm shaft to one in the reverse direction at a speed seven times as great. All of the moving parts in this box have ample wearing surface and a door in the column renders them easy of access.

The work driving spindles which are located in the head center block are connected by spur gears, and in addition one of the spindles also carries a worm gear. A separate universal shaft carrying a steel worm and sliding clutch operates these spindles, which are locked in position by an index disk and lever, the latter also controlling the sliding clutch. At the end of the return stroke of the table a special dog trips this lever, thus, unlocking the index disk and starting the worm. As the spindles revolve a pin on the index lever drops into the next notch of the disk and also throws the sliding clutch out of engagement. Separate disks with the required notches are furnished for the different numbers of divisions, which vary from 2 to 24.

Heavy springs actuate the spindles in the tail center block, which are operated by levers of a special type. In this way the operator is protected against accident, all necessity for placing the hands near the cutters when changing the work being thus removed. A gear-driven pump which is attached to the rear of the machine furnishes an ample supply of oil for each cutter. A swinging lever on the head center block stops the feed on the completion of the work. Only two levers are used to control the movement of the table, one regulating the amount of the feed and the other the direction of its travel.

The following table gives the principal dimensions and specifications of the machine:

Feed of table, in.....	16
Working surface of table, in.....	7 1/4 x 29
B. & S. taper of hole in spindle.....	No. 10
Length of work between centers, in.....	15
Number of feed changes.....	4
Minimum feed per minute, in.....	0.97
Maximum feed per minute, in.....	1.93
Diameter of smallest cone pulley step, in.....	9
Diameter of largest cone pulley step, in.....	11
Diameter of tight and loose pulleys, in.....	10
Face width of tight and loose pulleys, in.....	3
Ratio of back gears.....	4 1/2 to 1
Speed of countershaft, r.p.m.....	200
Weight, lb.....	1,875
Shipping weight, lb.....	2,100
Size of case, cu. ft.....	42

If desired a special tail center block is furnished by which taps up to 1 1/2 in. can be held on centers for squaring the shanks. As regularly equipped the maximum diameter of taps which can be fluted four at a time is 1 1/4 in.

The Pennsylvania Railroad, by the installation of protective devices, decreased the number of serious injuries to employees in its shops by more than 63 per cent. from January 1 to November 1 of last year. Experts from one of the large accident insurance companies were employed to inspect the shops and make recommendations.



# The Underwood Metal Tariff Schedule

## Text of the Bill Prepared by the Democratic Leaders of the House of Representatives "To Reduce the Duties on Metals and Manufactures of Metals"

We present below the full text of the bill which has been prepared by the Democratic leaders of the House of Representatives and which is expected to be pushed through that branch of Congress this week. The bill was made public on Monday, and with it a sub-committee of the Committee of Ways and Means presented elaborate tables showing details of the importations of metals in the fiscal year ended June 30, 1911, giving the percentages of duties collected on the various commodities, thus enabling an ad valorem equivalent to be roughly calculated on present specific rates.

For the purpose of enabling the reader to compare the proposed rates with the rates in the present Payne tariff act, the present rates have been inserted in their appropriate places between brackets [ ]. The percentages of duty calculated in the fiscal year 1911 as given in the printed tables with the sub-committee's report are shown in connection with the various items in parentheses ( ).

A bill to amend an act entitled "An act to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes," approved August 5, 1909.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That on and after the day following the passage of this act, there shall be levied, collected and paid the rates of duty which are prescribed in the paragraphs of this act upon the articles hereinafter enumerated, when imported from any foreign country into the United States or into any of its possessions (except the Philippine Islands and the Islands of Guam and Tutulla), and the said paragraphs and sections shall constitute and be a substitute for paragraphs 117 to 199, inclusive, of an act entitled "An act to provide revenue, equalize duties, and encourage the industries of the United States, and for other purposes," approved August 5, 1909.

### Dutiable List

1. Iron in pigs, iron kentledge, spiegeleisen [\$2.50 per ton], wrought and cast scrap iron and scrap steel [\$1 per ton], 8 per centum ad valorem; (pig iron, 15.66 per cent., spiegeleisen 13.12 per cent., and scrap iron 8.72 per cent. in 1911); but nothing shall be deemed scrap iron or scrap steel except second-hand or waste or refuse iron or steel fit only to be remanufactured; ferromanganese [\$2.50 per ton], chrome or chromium metal, ferrochrome or ferrochromium, ferromolybdenum, ferrophosphorus, ferrotitanium, ferrotungsten, ferrovanadium, molybdenum, titanium, tantalum, tungsten or wolfram metal, and ferrosilicon [20 to 25 per cent., according to value], 15 per centum ad valorem. (Ferromanganese 6.52 per cent., ferrosilicon 20.20 per cent., chrome, etc., 20.69 per cent. in 1911.)

2. All iron in slabs, blooms, loops, or other forms less finished than iron in bars, and more advanced than pig iron, except castings [4/10c. per lb.]; muck bars, bar iron, square iron, rolled or hammered [3/10c. per lb.], round iron, in coils or rods, bars or shapes of rolled or hammered iron not specially provided for in this act or in the first section of the act cited for amendment [6/10c. per lb.], 10 per centum ad valorem. (Slabs 25.62 per cent., bar iron 13.80 per cent., round iron 34.03 per cent., charcoal bars and blooms 19.17 per cent. in 1911.)

3. Beams, girders, joists, angles, channels, car-truck channels, T T, columns and posts or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, whether plain, punched, or fitted for use, or whether assembled or manufactured, 15 per centum ad valorem. [Not assembled, 3/10c. to 4/10c., according to value; assembled, 45 per cent.] (Imports in 1911, not assembled, 30.56 per cent.)

4. Boiler or other plate iron or steel, and strips of iron or steel, not specially provided for in this act or in the first section of the act cited for amendment, 20 per centum ad valorem [3/10c. to 6/10c. per lb., according to value]; sheets of iron or steel, common or black, of whatever dimensions, whether plain, corrugated or crimped, including crucible plate steel and saw plates, cut or sheared to shape or otherwise, or unsheared, and skelp iron or steel [5/10c. to 8/10c. per lb., according to value], whether sheared or rolled in grooves, or otherwise, 15 per centum ad valorem. (Plates 37.68 per cent., common sheets 32.35, cold-rolled sheets 30.03, saw plates 23.17 per cent. in 1911.)

5. Iron or steel anchors or parts thereof [1c. per lb.];

forgings of iron or steel, or of combined iron and steel, but not machined, tooled, or otherwise advanced in condition by any process or operation subsequent to the forging process, not specially provided for in this act or in the first section of the act cited for amendment [30 per cent.], 15 per centum ad valorem; antifriction balls, ball bearings and roller bearings, of iron or steel or other metal, finished or unfinished [45 per cent.], 25 per centum ad valorem. (Anchors 39.91 per cent., forgings 30 per cent. in 1911.)

6. Hoop, band or scroll iron or steel not otherwise provided for in this act or in the first section of the act cited for amendment [3/10c. to 6/10c. per lb.], 15 per centum ad valorem. (Hoop iron 17.83 per cent., band iron 35 per cent. in 1911.)

7. Railway bars, made of iron or steel, and railway bars made in part of steel, T rails and punched iron or steel flat rails [7/40c. per lb.], railway fishplates or splice bars made of iron or steel [3/10c. per lb.], 10 per centum ad valorem. (Steel rails 15.34 per cent. and fishplates 19.94 per cent. in 1911.)

8. All iron or steel sheets, plates or strips, and all hoop, band, or scroll iron or steel, when galvanized or coated with zinc, spelter or other metals, or any alloy of those metals [2/10c. per lb. extra duty]; sheets or plates composed of iron, steel, copper, nickel or other metal with layers of other metal or metals imposed thereon by forging, hammering, rolling or welding [40 per cent.]; sheets of iron or steel, polished, planished or glanced [1 1/4c. per lb.], by whatever name designated, including such as have been pickled or cleaned by acid, or by any other material or process, or which are cold rolled, smoothed only, not polished, and such as are cold hammered, blued, brightened, tempered or polished by any process to such perfected surface finish or polish better than the grade of cold rolled, smoothed only [2/10c. per lb., extra duty]; and sheets or plates of iron or steel, or taggers iron or steel, coated with tin or lead, or with a mixture of which these metals, or either of them, is a component part, by the dipping or any other process, and commercially known as tin plates,terne plates and taggers tin [1 2/10c. per lb.], 20 per centum ad valorem. (Galvanized sheets 33.82 per cent., sheets plated by forging 40 per cent., polished sheets 22.86 per cent., pickled sheets 24.27 per cent., cold-rolled strips 35.84 per cent., cold-rolled sheets 29.68 per cent., cold-hammered strips and sheets 32.93 per cent., tin and terne plates 37.55 per cent. in 1911.)

9. Steel ingots, clogged ingots, blooms and slabs, by whatever process made; die blocks or blanks; billets and bars and tapered or beveled bars; mill shafting; pressed, sheared or stamped shapes, not advanced in value or condition by any process or operation subsequent to the process of stamping; hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam or iron-molded steel castings; sheets and plates and steel not specially provided for in this act or in the first section of the act cited for amendment [7/40c. per lb. to 7c. per lb., according to value, and 20 per cent. on value above 40c. per lb.], 10 per centum ad valorem. (Steel ingots, billets, etc., 21.85 per cent., other items 31.08 per cent. in 1911.)

10. Steel wool or steel shavings [40 per cent.], 20 per centum ad valorem.

11. Grit, shot and sand made of iron or steel, that can be used as abrasives [1c. per lb.], 20 per centum ad valorem. (Imports 1911, 72.91 per cent.)

12. Rivet, screw, fence and other iron or steel wire rods, whether round, oval, flat or square, or in any other shape,

and nail rods, all the foregoing in coils or otherwise [3/10c. to 6/10c. per lb.], including wire rods and iron or steel bars, cold rolled, cold drawn, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering [½c. per lb., extra duty], 10 per centum ad valorem: Provided, That all round iron or steel rods smaller than No. 6 wire gauge shall be classed and dutiable as wire. (Plain rods 14.12 per cent.; cold-rolled, etc., 14.91 per cent. in 1911.)

13. Round iron or steel wire, all wire composed of iron, steel or other metal [1c. to 1¼c. per lb.], except gold or silver, covered with cotton, silk or other material, corset clasps, corset steels, dress steels and all flat wires, and steel in strips, not thicker than No. 15 wire gauge and not exceeding 5 in. in width, whether in long or short lengths, in coils or otherwise, and whether rolled or drawn through dies or rolls, or otherwise produced, and all other wire not specially provided for in this act or in the first section of the act cited for amendment [35 per cent.]; iron and steel wire coated by dipping, galvanizing or similar process with zinc, tin or other metal [2/10c. per lb., extra duty], 20 per centum ad valorem: Provided, That articles manufactured wholly or in chief value of any wire or wires provided for in this paragraph shall pay [1c. per lb. extra] the rate of duty imposed in this act or in the first section of the act cited for amendment upon any wire used in the manufacture of such articles: And provided further, That no article made from or composed of wire shall pay a less rate of duty than [40] 20 per centum ad valorem: And provided further, That barbed and all other fence wire [¾c. per lb.] and wire fencing [1c. per lb. extra] shall be exempt from duty; telegraph, telephone and other wires and cables composed of metal and rubber, or of metal, rubber and other materials [40 per cent.], 20 per centum ad valorem; wire heddles or healds [25c. per 1000 and 40 per cent. extra duty], 25 per centum ad valorem. (Plain wire 38.18 per cent., covered with silk, etc., 35 per cent., cold-hammered 37.07 per cent., coated 37.23 per cent., manufacturers of wire 44.56 per cent., heddles 77.72 per cent. in 1911.)

14. No article not specially provided for in this act or in the first section of the act cited for amendment, which is wholly or partly manufactured from tin plate, terne plate, or the sheet, plate, hoop, band or scroll iron or steel herein provided for, or of which such tin plate, terne plate, sheet, plate, hoop, band or scroll iron or steel shall be the material of chief value, shall pay a lower rate of duty than that imposed on the tin plate, terne plate or sheet, plate, hoop, band or scroll iron or steel from which it is made, or of which it shall be the component thereof of chief value.

15. No allowance or reduction of duties for partial loss or damage in consequence of rust or of discoloration shall be made upon any description of iron or steel, or upon any article wholly or partly manufactured of iron or steel, or upon any manufacture of iron or steel.

16. All metal produced from iron or its ores, which is cast and malleable, of whatever description or form, without regard to the percentage of carbon contained therein, whether produced by cementation or converted, cast or made from iron or its ores, by the crucible, Bessemer, Clapp-Griffith, pneumatic, Thomas-Gilchrist, basic, Siemens-Martin, or open-hearth process, or by the equivalent of either, or by a combination of two or more of the processes, or their equivalents, or by any fusion or other process which produces from iron or its ores a metal either granular or fibrous in structure, which is cast and malleable, excepting what is known as malleable-iron castings, shall be classed and denominated as steel.

17. Anvils of iron or steel, or of iron and steel combined, by whatever process made, or in whatever stage of manufacture [1¼c. per lb.], 15 per centum ad valorem. (Imports in 1911, 31.95 per cent.)

18. Automobiles, bicycles and motorcycles and finished parts of any of the foregoing, not including tires [45 per cent.], 40 per centum ad valorem.

19. Axles, or parts thereof, axle bars, axle blanks, or forgings for axles, whether of iron or steel, without reference to the stage or state of manufacture, not otherwise provided for in this act or in the first section of the act cited for amendment [¾c. per lb.], 10 per centum ad valorem: Provided, That when iron or steel axles are imported fitted in wheels, or parts of wheels, of iron or steel, they shall be dutiable at the same rate as the wheels in which they are fitted. (Imports in 1911, 14.81 per cent.)

20. Blacksmith's hammers, tongs and sledges, track tools, wedges and crowbars, whether of iron or steel [1¼c. per lb.], 10 per centum ad valorem. (Imports in 1911, 17.12 per cent.)

21. Bolts, with or without threads or nuts, or bolt blanks, finished hinges or hinge blanks, and spiral nut locks and washers, whether of iron or steel [1¼c. per lb.] 15 per centum ad valorem. (Imports in 1911, 29.07 per cent.)

22. Card clothing not actually and permanently fitted to and attached to carding machines or to parts thereof at the

time of importation, when manufactured with round iron or round steel wire, tempered or untempered, and including that manufactured with plated wire or other than iron or steel wire, or with felt face, wool face, or rubber face cloth containing wool [20c. to 55c. per sq. ft.], 30 per centum ad valorem. (Imports in 1911, 57.34 per cent.)

23. Cast-iron pipe of every description [¾c. per lb.], cast-iron andirons, plates, stove plates, sadirons, tailor's irons, hatter's irons and castings and vessels wholly of cast iron [8/10c. per lb.], including all castings of iron or cast-iron plates which have been chiseled, drilled, machined or otherwise advanced in condition [2/10c. per lb. extra duty] by processes or operations subsequent to the casting process but not made up into articles; castings of malleable iron not specially provided [7/10c. per lb.] for in this act or in the first section of the act cited for amendment; cast hollow ware, coated, glazed or tinned [1¼c. per lb.], 10 per centum ad valorem. (Pipe 16.30 per cent., andirons 11.17 per cent., castings 26.16 per cent., malleable castings 13.80 per cent., hollow ware 20.01 per cent. in 1911.)

24. Chain or chains of all kinds, made of iron or steel [¾c. to 3c. per lb.], 20 per centum ad valorem. (Imports in 1911, 31.12 per cent.)

25. Lap-welded, butt-welded, seamed or jointed iron or steel tubes, pipes, flues or stays [1c. to 2c. per lb.], cylindrical or tubular tanks or vessels for holding gas, liquids or other material, whether full or empty [30 per cent.], flexible metal tubing or hose [30 per cent.], not specially provided for in this act or in the first section of the act cited for amendment, whether covered with wire or other material, or otherwise, including any appliances or attachments affixed thereto, welded cylindrical furnaces, tubes or flues made from plate metal, and corrugated, ribbed or otherwise reinforced against collapsing pressure [2c. per lb.], and all other iron or steel tubes, finished [30 per cent.] not specially provided for in this act or in the first section of the act cited for amendment, 20 per centum ad valorem. (Tubes 29.01 per cent., cylindrical tanks 29.95 per cent., cylindrical furnaces 45.71 per cent. in 1911.)

26. Penknives, pocketknives, clasp knives, pruning knives, budding knives, erasers, manicure knives and all knives by whatever name known, including such as are denominatively mentioned in this act or in the first section of the act cited for amendment, which have folding or other than fixed blades or attachments, and razors, all the foregoing, whether assembled but not fully finished or finished [40 per cent. to 20c. each and 40 per cent. extra], 35 per centum ad valorem: Provided, That blades, handles or other parts of any of the foregoing knives, razors or erasers shall be dutiable at not less than the rate herein imposed upon knives, razors and erasers. Scissors and shears and blades for the same, finished or unfinished, 30 per centum ad valorem: Provided further, That all articles specified in this paragraph shall, when imported, have the name of the maker or purchaser and beneath the same the name of the country of origin die sunk conspicuously and indelibly on the shank or tang of at least one or, if practicable, each and every blade thereof. (Penknives 77.62 per cent., razors 71.30 per cent., scissors and shears 52.55 per cent. in 1911.)

27. Sword blades, and swords and side arms, irrespective of quality or use, in part of metal [50 per cent.], 30 per centum ad valorem.

28. Table, butchers', carving, cooks', hunting, kitchen, bread, butter, vegetable, fruit, cheese, carpenters' bench, curriers', drawing, farriers', fleshing, hay, tanners', plumbers', painters', palette, artists', and shoe knives, forks and steels, finished or unfinished, with or without handles [not under 40 per cent.], 25 per centum ad valorem: Provided, That all the articles specified in this paragraph, when imported, shall have the name of the maker or purchaser, and beneath the same the name of the country of origin indelibly stamped or branded thereon in a place that shall not be covered thereafter.

29. Files, file blanks, rasps and floats, of all cuts and kinds [25c. to 77¼c. per dozen], 25 per centum ad valorem. (Imports in 1911, 61.16 per cent.)

30. Muskets, muzzle-loading shotguns and rifles, and parts thereof [25 per cent.], 15 per centum ad valorem.

31. Breech-loading shotguns and rifles, combination shotguns and rifles, and parts thereof and fittings thereof, including barrels further advanced than rough bored only; pistols, whether automatic, magazine or revolving, or parts thereof and fittings thereof [75c. each and 25 per cent. extra to \$6 each and 35 per cent. extra], 35 per centum ad valorem. (Imports in 1911, 45.64 per cent.)

32. Table, kitchen, and hospital utensils or other similar hollow ware, of iron or steel, enameled or glazed with vitreous glasses, but not ornamented or decorated with lithographic or other printing [40 per cent.], 25 per centum ad valorem.

33. Needles for knitting or sewing machines [\$1 per 1000 and 25 per cent. extra], latch needles [\$1.15 per 1000 and 35 per cent. extra], crochet needles and tape needles, knitting



and all other needles not specially provided for in this act or in the first section of the act cited for amendment, and bodkins of metal [25 per cent.], 25 per centum ad valorem; but no articles other than the needles which are specifically named in this act or in the first section of the act cited for amendment shall be dutiable as needles unless having an eye, and fitted and used for carrying a thread. Needle cases or needle books furnished with assortments of needles or combinations of needles and other articles shall pay duty as entireties according to the component material of chief value therein. (Imports in 1911, 42.98 per cent.)

34. Fishhooks, 10 per centum ad valorem; fishing rods and reels, artificial flies, artificial baits, smelted hooks, and all other fishing tackle or parts thereof, not specially provided for in this act or in the first section of the act cited for amendment, except fishing lines, fishing nets and seines [45 per cent.], 30 per centum ad valorem.

35. Steel plates engraved, stereotype plates, electrotype plates and plates of other materials, engraved for printing [20 per cent.], plates of iron or steel engraved or fashioned for use in the production of designs, patterns or impressions on glass in the process of manufacturing plate or other glass [25 per cent.], 15 per centum ad valorem; lithographic plates of stone or other material engraved, drawn or prepared, and wet transfer paper or paper prepared wholly with glycerin, or glycerin combined with other materials, containing the imprints taken from lithographic plates [50 per cent.], 25 per centum ad valorem.

36. Rivets, studs, and steel points, lathed, machined, or brightened, and rivets or studs for nonskidding automobile tires [45 per cent.], and rivets of iron or steel, not specially provided for in this act or in the first section of the act cited for amendment [1½c. per lb.], 20 per centum ad valorem. (Imports in 1911, 39.76 per cent.)

37. Crosscut saws, saw mills, pit and drag saws, circular saws, steel band saws, finished or further advanced than tempered and polished, hand, back, and all other saws, not specially provided for in this act or in the first section of the act cited for amendment [5c. per linear ft. to 6c. per lb. and 20 per cent. extra], 12 per centum ad valorem. (Crosscut saws 17.35 per cent., pit and drag saws 31.44 per cent., circular saws 20 per cent., band saws 30.26 per cent., hand and back saws 25 per cent. in 1911.)

38. Screws, commonly called wood screws, made of iron or steel [3c. to 10c. per lb.], 25 per centum ad valorem. (Imports in 1911, 54.23 per cent.)

39. Umbrella and parasol ribs and stretchers, composed in chief value of iron, steel, or other metal, in frames or otherwise, and tubes for umbrellas, wholly or partially finished [50 per cent.], 30 per centum ad valorem.

40. Wheels for railway purposes, or parts thereof, made of iron or steel, and steel-tired wheels for railway purposes, whether wholly or partly finished, and iron or steel locomotive, car, or other railway tires or parts thereof, wholly or partly manufactured [1½c. per lb.], 25 per centum ad valorem (50.63 per cent. in 1911); ingots, cogged ingots, blooms, or blanks for the same, without regard to the degree of manufacture [1c. per lb.], 10 per centum ad valorem (14 per cent. in 1911): Provided, That when wheels for railway purposes, or parts thereof, of iron or steel, are imported with iron or steel axles fitted in them, the wheels and axles together shall be dutiable at the same rate as is provided for the wheels when imported separately. (Total paragraph, 50.63 per cent. in 1911.)

41. Aluminum, aluminum scrap and alloys of any kind, in which aluminum is the component material of chief value, in crude form [7c. per lb.], aluminum in plates, sheets, bars, and rods [11c. per lb.]; barium, calcium, magnesium, sodium, and potassium, and alloys of which said metals are the component material of chief value [3c. per lb. and 25 per cent.], 25 per centum ad valorem. (46.19 per cent. in 1911.)

42. Antimony, as regulus or metal [1½c. per lb.] (26 per cent. in 1911), antimony ore, stibnite and matte containing antimony but not containing more than 10 per centum of lead [1c. per lb.] (26.98 per cent. in 1911), 10 per centum ad valorem on the antimony contents therein contained: Provided, That on all importations of antimony-bearing ores and matte containing antimony the duties shall be estimated at the port of entry, and a bond given in double the amount of such estimated duties for the transportation of the ores by common carriers bonded for the transportation of appraised or unappraised merchandise to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishment, they shall be sampled according to commercial methods under the supervision of Government officers, who shall be stationed at such establishment, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample and report the result to the proper customs officers, and the import entry shall be liquidated thereon, except in case of ores that shall be removed to a bonded warehouse to be refined for

exportation as provided by law, and the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph; antimony, oxide of [1½c. per lb. and 25 per cent.] (53.07 per cent. in 1911), 25 per centum ad valorem.

43. Argentine, albata, or German silver, unmanufactured [25 per cent.], 15 per centum ad valorem. (25 per cent. in 1911.)

44. Bauxite, or beauxite, crude, not refined or otherwise advanced in condition from its natural state [\$1 per ton], 10 per centum ad valorem. (25.3 per cent. in 1911.)

45. Bronze powder, brocades, flitters, and metallics [12c. per lb.] (57.33 in 1911); bronze, or Dutch-metal or aluminum, in leaf [6c. per 100 leaves] (41.06 in 1911), 25 per centum ad valorem.

46. Copper, in rolled plates, called braziers' copper, sheets, rods, pipes, and copper bottoms [2½c. per lb.] (11.48 per cent. in 1911), sheathing or yellow metal of which copper is the component material of chief value, and not composed wholly or in part of iron ungalvanized [2c. per lb.] (10.97 per cent. in 1911), 5 per centum ad valorem.

47. Gold leaf [35c. per 100 leaves equivalent to 3¼ x 3¼ in., in proportion for larger sizes], 35 per centum ad valorem. (38.65 per cent. in 1911.)

48. Silver leaf [10c. per 100 leaves], 30 per centum ad valorem. (87.70 per cent. in 1911.)

49. Tinsel wire, lame or lahn, made wholly or in chief value of gold, silver, or other metal [5c. per lb.] (10.45 per cent. in 1911), 10 per centum ad valorem; bullions and metal threads, made wholly or in chief value of tinsel wire, lame or lahn [5c. per lb. and 30 per cent.] (35.20 per cent. in 1911), 30 per centum ad valorem; fabrics, laces, embroideries, braids galloons, trimmings, ribbons, beltings, ornaments, toys, or other articles, made wholly or in chief value of tinsel wire, lame or lahn, bullions, or metal threads [15c. per lb. and 60 per cent.] (63.76 per cent. in 1911), 40 per centum ad valorem.

50. Hooks and eyes, metallic, whether loose, carded, or otherwise [4½c. per lb. and 15 per cent.], 15 per centum ad valorem. (32.61 per cent. in 1911.)

51. Lead-bearing ore of all kinds, and lead dross [1½c. per lb.], 25 per centum ad valorem upon the lead contained therein (52.77 in 1911): Provided, That on all importations of lead-bearing ores the duties shall be estimated at the port of entry, and a bond given in double the amount of such estimated duties for the transportation of the ores by common carriers bonded for the transportation of appraised or unappraised merchandise to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishments they shall be sampled according to commercial methods under the supervision of Government officers, who shall be stationed at such establishments, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample and report the result to the proper customs officers, and the import entries shall be liquidated thereon, except in cases of ores that shall be removed to a bonded warehouse to be refined for exportation as provided by law. And the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph.

52. Lead bullion or base bullion, lead in pigs and bars, lead in any form not specially provided for in this section, old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured [2½c. per lb.] (93.59 per cent. in 1911); lead in sheets, pipe, shot, glaziers' lead, and lead wire [2½c. per lb.] (52.75 per cent. in 1911); all the foregoing 25 per centum ad valorem. (Total paragraph, 93.58 per cent. in 1911.)

53. Metallic mineral substances in a crude state, and metals unwrought, whether capable of being wrought or not, not specially provided for in this act or in the first section of the act cited for amendment, [20 per cent.], 10 per centum ad valorem; monazite sand and thorite [4c. per lb.] (44.82 per cent. in 1911); thorium, oxide of and salts of; gas mantles treated with chemicals or metallic oxides; and gas-mantle scrap consisting in chief value of metallic oxides [40 per cent.], 25 per centum ad valorem.

54. Nickel, nickel oxide, alloy of any kind in which nickel is a component material of chief value, in pigs, ingots, bars, rods, or plates [6c. per lb.] (16.80 per cent. in 1911), 10 per centum ad valorem; sheets or strips [35 per cent.], 20 per centum ad valorem. (Total paragraph, 18.95 per cent. in 1911.)

55. Pens, metallic [except gold, 12c. per gross; nib and barrel in one piece, 15c. per gross], 25 per centum ad valorem. (Total paragraph, 48.78 per cent. in 1911.)

56. Penholder tips, penholders and parts thereof [5c. per gross and 25 per cent.] (28.95 per cent. in 1911); gold pens [25 per cent.]; fountain pens, and stylographic pens [30 per cent.]; combination penholders, comprising penholder, pen-

cil, rubber eraser, automatic stamp, or other attachment [45 per cent.], 25 per centum ad valorem.

57. Pins with solid heads, without ornamentation, including hair, safety, hat, bonnet, and shawl pins; any of the foregoing composed wholly of brass, copper, iron, steel, or other base metal, not plated with gold or silver, and not commonly known as jewelry [35 per cent.], 20 per centum ad valorem.

58. Quicksilver [7c. per lb.] (13.24 per cent. in 1911), 10 per centum ad valorem. The flasks, bottles, or other vessels in which quicksilver is imported shall be subject to the same rate of duty as they would be subjected to if imported empty.

59. Type metal, on the lead contained therein [ $1\frac{1}{2}$ c. per lb.] (33.54 per cent. in 1911), and new types [25 per cent.], 15 per centum ad valorem.

60. Watch movements including time-detectors, whether imported in cases or not [7 jewels and less, 75c., graduated up to \$3 each and 25 per cent. for above 17 jewels] (51.84 per cent. in 1911); watch cases and parts of watches, chronometers, box or ship, and parts thereof [40 per cent.]; lever clock movements having jewels in the escapement, and clocks containing such movements [\$1 each and 40 per cent.] (53.20 per cent. in 1911); all other clocks and parts thereof, not otherwise provided for in this act or in the first section of the act cited for amendment, whether separately packed or otherwise, not composed wholly or in chief value of china, porcelain, parian, bisque, or earthenware [40 per cent.], 30 per centum ad valorem; all jewels for use in the manufacture of watches or clocks [10 per cent.], 10 per centum ad valorem; enameled dials for watches or other instruments [3c. each and 40 per cent.] (98.16 per cent. in 1911), 35 per centum ad valorem: Provided, That all watch and clock dials, whether attached to movements or not, shall have indelibly painted or printed thereon the country of origin, and that all watch movements, lever clock movements with jewels in the escapement, whether imported assembled or knocked down for reassembling, and cases of foreign manufacture, shall have the name of the manufacturer and country of manufacture cut, engraved, or die sunk conspicuously and indelibly on the plate of the movement and the inside of the case, respectively; and the movements shall also have marked thereon by one of the methods indicated the number of jewels and adjustments, said number to be expressed both in words and in Arabic numerals; and none of the aforesaid articles shall be delivered to the importer unless marked in exact conformity to this direction.

61. Zinc in blocks or pigs and zinc dust [ $1\frac{1}{2}$ c. per lb.] (28.57 per cent. in 1911); in sheets [ $1\frac{1}{2}$ c. per lb.] (25.48 per cent. in 1911); and old and worn-out zinc fit only to be remanufactured [1c. per lb.] (25.60 per cent. in 1911), 15 per centum ad valorem.

62. Cans, boxes, packages, and other containers of all kinds (except such as are hermetically sealed by soldering or otherwise), composed wholly or in chief value of metal lacquered or printed by any process of lithography whatever, if filled or unfilled, and whether their contents be dutiable or free [4c. per lb. and 35 per cent.] (66.53 per cent. in 1911), 30 per centum ad valorem; but no cans, boxes, packages, or containers of any kind, of the capacity of five pounds or under, subject to duty under this paragraph, shall pay less duty than if the same were imported empty; and the dutiable value of the same shall include all packing charges, cartons, wrappings, envelopes, and printed matter accompanying them when such cans, boxes, packages, or containers are imported wholly or partly filled with merchandise exempt from duty (except liquids and merchandise

commercially known as drugs) and which is commonly dealt in at wholesale in the country of original exportation in bulk or in packages exceeding five pounds in capacity: Provided, That paper, cardboard, or pasteboard wrappings or containers that are made and used only for the purpose of holding or containing the article with which they are filled, and after such use are mere waste material, shall not be dutiable unless their contents are dutiable.

63. Bottle caps of metal, whether plain or colored, waxed, lacquered, enameled, lithographed, or embossed in color [ $\frac{1}{2}$ c. per lb.] (54.88 per cent. in 1911), 30 per centum ad valorem.

64. All steam engines [30 per cent.], 15 per centum ad valorem; embroidering machines, and lace-making machines, including machines for making lace curtains, nets, or nettings [45 per cent.], 25 per centum ad valorem.

65. Nippers and pliers of all kinds wholly or partly manufactured [8c. per lb. and 40 per cent.], 30 per centum ad valorem.

66. Articles or wares not specially provided for in this act or in the first section of the act cited for amendment, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum, or other metal, and whether partly or wholly manufactured [45 per cent.], 25 per cent. ad valorem.

### Free List

That on and after the day following the passage of this act the articles mentioned in the following paragraphs shall, when imported into the United States or into any of its possessions (except the Philippines Islands and the islands of Guam and Tutuila), be exempt from duty:

67. Iron ore, including manganiferous iron ore, and the dross or residuum from burnt pyrites [15c. per ton.] (4.23 per cent. in 1911).

68. Hoop or band iron, or hoop or band steel, cut to lengths, or wholly or partly manufactured into hoops or ties, coated or not coated with paint or any other preparation, with or without buckles or fastenings, for baling cotton or any other commodity [ $\frac{3}{10}$ c. per lb.] (29.07 per cent. in 1911).

69. Barbed and all other fence wire [ $\frac{3}{4}$ c. per lb.] (30 per cent. in 1911), and wire fencing.

70. Cut nails and cut spikes of iron or steel [4/10c. per lb.] (14.12 per cent. in 1911); horseshoe nails, hob nails, and all other wrought iron or steel nails not specially provided for in this act or in the first section of the act cited for amendment [ $1\frac{1}{2}$ c. per lb.] (9.82 per cent. in 1911); wire staples, wire nails made of wrought iron or steel [4/10c. and  $\frac{3}{4}$ c. per lb., according to length and gauge] (11.95 per cent. in 1911); spikes (37.88 per cent. in 1911), nuts, and washers (10.76 per cent. in 1911), and horse, mule, or ox shoes, of wrought iron or steel [ $\frac{3}{4}$ c. per lb.] (21.08 per cent. in 1911), and cut tacks, brads, or sprigs [ $\frac{1}{2}$ c. and  $\frac{3}{4}$ c. per lb.].

71. Tungsten-bearing ores of all kinds [10 per cent.]

72. Zinc-bearing ore of all kinds, including calamine [containing less than 10 per cent. zinc, free; graduated duties on 10 per cent. zinc ores and up, to 1c. per lb. on contained zinc] (55.64 per cent. in 1911).

73. Cash registers, linotype and all typesetting machines, machine tools, printing presses, sewing machines, typewriters, and tar and oil spreading machines used in the construction and maintenance of roads and in improving them by the use of road preservatives, all the foregoing whether imported in whole or in parts, including repair parts [30 per cent.].



## The Oliver Grinder

The use of Hyatt roller bearings is the especially distinctive feature in the new No. 8 tool grinder which has been recently brought out by the W. W. Oliver Mfg. Company, Buffalo, N. Y. This machine is said to be a vast improvement over the ordinary type of grinder and it is also emphasized that by its use the cost of operation is reduced to a minimum.

The use of the Hyatt roller bearings, not only cushions the shocks encountered in operation, but presents a line of contact extending the full length of the bearing. In addition the bearing also serves as an oil reservoir and oil distributor, is self-cleaning and requires oiling only at long intervals. The bearings are lubricated through dustproof caps which are sunk in the bearing shells and when the roller bearings are oiled it is emphasized that only a little is required to secure perfect lubrication.

The spindle is made from machine steel and is accurately ground and machined. The guards, which have been designed to conform with the legislative enactments of



The No. 8 Ball Bearing Grinder, Built by the W. W. Oliver Mfg. Company, Buffalo, N. Y.

the various states, are of light construction but are nevertheless heavy enough to protect the operator. The water pot is placed in a convenient location for the workman resting on a suitable table for holding tools, etc., in the front of the machine.

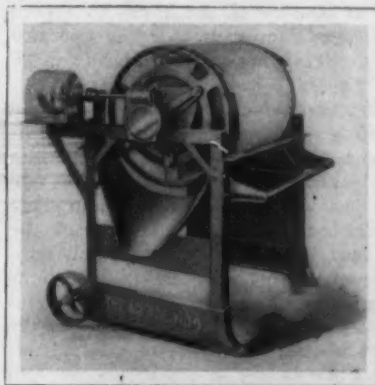
The following table gives the principal dimensions and specifications of the tool:

Size of base, in.....	14x12½
Length of spindle, in.....	13¾
Diameter of spindle in bearings, in.....	¾
Diameter of spindle between flanges, in.....	¾
Maximum distance between flanges, in.....	1
Length of bearings, in.....	2¼
Distance between floor and spindle center, in.....	38
Distance between table and spindle center, in.....	7 5/16
Diameter of driving pulley, in.....	2
Face width of driving pulley, in.....	2½
Speed of grinder, r.p.m.....	2,000
Net weight of grinder, lb.....	96
Shipping weight of grinder, lb.....	130

This grinder is intended for use with wheels 8 in. in diameter and 1 in. wide with a ¾-in. hole for mounting on the spindle. These wheels are, however, not included in the regular equipment of grinder.

## Electrically Driven Rotary Sand Sifter

The Arcade rotary sand sifter has been built for driving by the direct attached electric motor, as the accompanying cut will show. The general features of this sifter have already been outlined in these pages, one article appearing in the issue of April 27, 1911, and no special explanation will therefore be necessary at this time other than to mention that the sifter



Arcade Rotary Sand Sifter

has two cylinders of wire mesh, both 30 in. long, the inner 14 in. in diameter and the outer 24 in. in diameter, mounted on a heavy frame which revolves. By means of a series of rollers and lugs the cylinders are jolted four times during each revolution, this action being to break lumps and prevent the sand from clogging the mesh.

The sifter is built for hand operation, a crank arm being attached to the axis of the cylinders, which may also be operated by a compressed air motor; in this case an oscillating air cylinder is mounted where the electric motor is and turns a crank arm instead of driving a worm and wheel as is done with the electric motor attachment. The machine has a total height of 3 ft. 9 in. and is 2 ft. 5 in. wide. The inner cylinder is ordinarily of ½-in. mesh, while the outer cylinder is given a size of opening to suit demands.

## Springfield Branch, National Metal Trades Association

The Springfield Branch, National Metal Trades Association, and the Connecticut Valley Metal Trades Association held their annual meeting at Springfield, Mass., January 19, with a large attendance. Officers were elected for the year as follows: President, F. C. Breakspear, A. G. Spalding & Brothers Mfg. Company, Chicopee; vice-president, Charles P. Fay, J. Stevens Arms & Tool Company, Chicopee Falls; secretary, Albert E. Smith, Knox Automobile Company, Springfield; treasurer, Springfield National Bank. Executive Committee—R. D. Reed, H. B. Smith Company, Westfield; F. C. Feiker, Northampton Cutlery Company, Northampton; T. J. Rider, Rider-Bagg Company, Springfield; A. J. Tucker, Cheeney Bigelow Wire Works, Springfield; C. W. Richards, Stevens-Duryea Company, Chicopee Falls, and George A. Ludington, Fisk Rubber Company, Chicopee Falls.

The principal speaker of the evening was Henry D. Sharpe, Brown & Sharpe Mfg. Company, Providence, R. I., who made a forceful address on the relations of the manufacturer to the employee and the methods which should be adopted in attaining the desired cooperation between them. He condemned the attempts to gain these ends by means of legislation. M. W. Alexander, Lynn, Mass., of the General Electric Company, and a member of the Massachusetts Commission on Compensation for Industrial Accidents, spoke interestingly on the new Massachusetts compensation act. The other speakers were J. J. Feeley, a prominent Boston lawyer, and Mayor E. H. Lathrop of Springfield. The associations have had a very successful year.

The Firth-Sterling Steel Company, of which E. S. Jackman & Co. are agents, has established at Sixteenth and Connecticut streets, San Francisco, Cal., a new branch under the management of E. O. Reynolds, assisted by H. S. Norman, Alfred Olsen and a competent staff of experienced tool steel men, for the sale of Firth-Sterling Blue Chip high-speed steel, Firth-Sterling special tool steel and other Firth-Sterling brands.

## The Barnes 26-In. Drill

A new tool which is designated by the builder as its No. 9 26-in. high-speed geared drill has been recently developed by the W. F. & John Barnes Company, Rockford, Ill. This drill has a sliding head and is provided with back gears, positive power feed and automatic stop, and a quick return lever for the spindle. The equipment also includes steel-crown gearing, a double splined spindle and a roller thrust bearing. As far as possible all the levers have been located so as to make them convenient for the operator without requiring him to leave his regular place and to add to the rapidity of the drill's operation.

One of the special features which it is claimed has not been available on a drilling machine before is the employment of a new and patented type of lower feed mechanism which gives a universal control of the drilling spindle. In this way the operator has the choice of two automatic stops so that the combination can be set to disengage the worm from the worm gear, thus permitting the drill spindle to return quickly from drilling or reaming operations or the lighter feed gears can be disengaged, an arrangement which stops the feed but leaves the worm and the worm gear in mesh. This latter arrangement is an advantage in performing accurate facing and combination tool operations.

The speed box which is the company's standard type though of simple construction is nevertheless strong and durable and provides nine changes by employing only nine gears. The levers are conveniently located for the operator and the action of the box is said to be smooth and rapid.

Eight feed changes ranging from 0.006 to 0.064 in. per revolution of the spindle are obtained by the use of the builder's standard positive self feed. The use of this feed

The following table gives the principal dimensions and specifications of the drill:

Over-all height, in.....	85
Maximum distance between spindle and base, in.....	50 1/2
Minimum distance between spindle and base, in.....	20 1/2
Maximum distance between spindle and table, in.....	37 1/2
Diameter of column, in.....	7
Diameter of spindle, in.....	1 11/16
Width of column face, in.....	6
Travel of sliding head, in.....	21
Travel of spindle, in.....	11
Morse taper of spindle.....	No. 4
Number of feed changes.....	9
Minimum feed per revolution of spindle, in.....	0.006
Maximum feed, per revolution of spindle, in.....	0.064
Table travel, in.....	17 1/2
Size of table, in.....	18 x 18
Number of speed changes.....	9
Minimum speed, r.p.m.....	46
Maximum speed, r.p.m.....	417
Diameter of driving pulleys, in.....	12
Face width of driving pulleys, in.....	3 3/4
Diameter of crown gear, in.....	6 11/16
Diameter of bevel pinion, in.....	4 19/32
Face width of crown gears, in.....	1 3/4
Speed of countershaft, r.p.m.....	300
Floor space, in.....	61 x 21
Weight, lb.....	1,850

The following are furnished as extras at a slight additional cost; geared tapping attachment, oil pump attachment, quarter-turn countershaft and electric motor drive. In the case of the motor drive the motor is mounted on the base of the drill and the driving belt runs directly from the motor to the speed box at the top of the drill.

## Impurities in Iron and Corrosion

The following extract is made from a paper on "Real Purity in Iron," read by G. H. Charls, of the American Rolling Mill Company, Middletown, Ohio, before the National Corrugated Culvert Association:

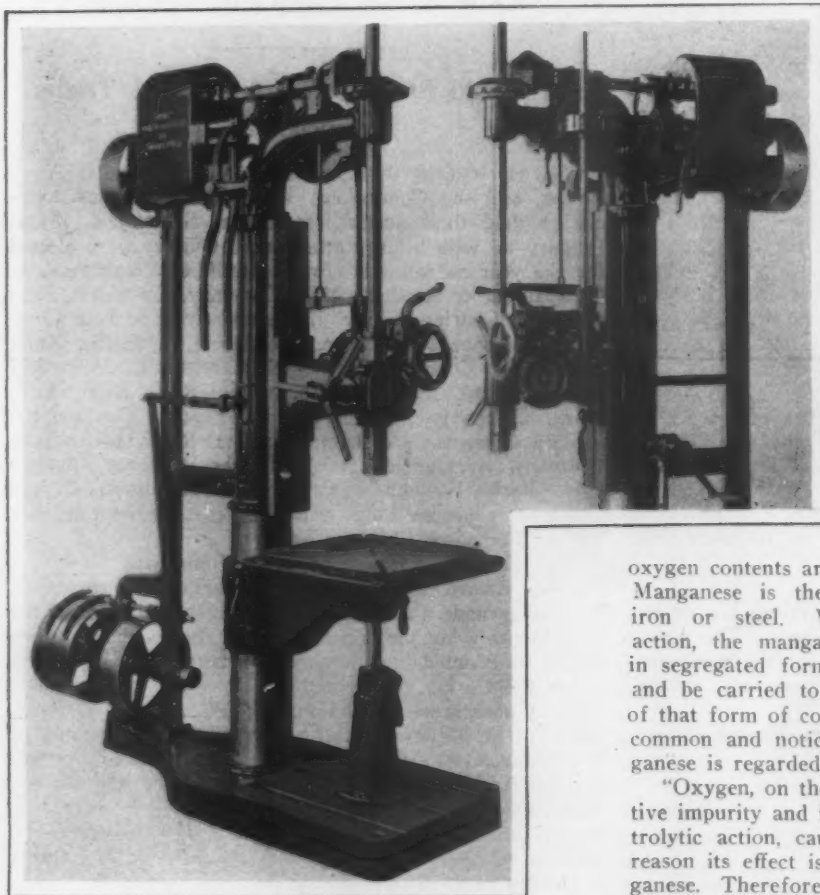
"In striving for the greatest possible purity in iron, for years the only ingredients considered were sulphur, phosphorus, carbon, manganese and silicon. No attention was given to other impurities which have been found to be just as harmful, possibly more so. It is now known that the elimination of all impurities that differ electrochemically from iron is absolutely essential if the highest grade of durability is desired.

"The reduction of sulphur, phosphorus, carbon, manganese and silicon contents of metal made in the open hearth furnace, with a total disregard of the copper, oxygen, hydrogen and nitrogen contents means that the metal low in the first five impurities may be very inferior to the poorest grade of Bessemer steel. Especially is this true if the manganese and

oxygen contents are not carefully reduced to a minimum. Manganese is the only positive element appearing in iron or steel. When moisture starts an electrolytic action, the manganese in steel (which is always there in segregated form) must of necessity go into solution and be carried to the negative pole. This is the cause of that form of corrosion known as "pitting," which is so common and noticeable in steel and is the reason manganese is regarded as perhaps the most harmful impurity.

"Oxygen, on the other hand, is perhaps the most negative impurity and is therefore a great accelerator of electrolytic action, causing rust and quick decay. For this reason its effect is almost as disastrous as that of manganese. Therefore, it is evident that in order to positively know just how pure the metal is, the consumer must either submit samples to a reliable testing laboratory, or insist upon the manufacturer giving a written guarantee or bond, insuring the total amount of all impurities appearing in his product, including sulphur, phosphorus, carbon, manganese, silicon, copper, hydrogen, nitrogen and oxygen.

"It has been found that an iron containing a minimum amount of all impurities, guaranteed by the manufacturers to be less than 16-100 of 1 per cent., is durable, reliable and worthy of confidence."



Two Views of the No. 9 26-In. High Speed Geared Drill, Built by the W. F. & John Barnes Company, Rockford, Ill.

enables the drill to be employed for reamer work, drilling in steel or boring in cast iron and will increase the capacity of the drill from 15 to 25 per cent. The advantage of this arrangement is that there are no belts to slip or to be shifted, all the changes being effected by the simple movement of a lever.



### Arrangement of Flooring with Regard to Sprinklers

The designs for the ordinary shop or mill are usually carried into material effect before the question of sprinklers is taken up. It may then be discovered that a different spacing of the timbers might have made a material change in the cost of the sprinkler system. Of course, prices will vary with localities, but, taking a given case, an interesting comparison may be made:

The fundamental rule of the insurance company was that no sprinklers should be called upon to serve a plain surface exceeding 100 sq. ft. between timbers, and that for any less undivided space, unless a very small one, one sprinkler would be required. Fortunately, the building was laid out on a 20-ft. unit basis, and in the case of the roof, the timbers, which were 20 ft. long, were spaced 10 ft. on centers, keeping just within the limit which called for two sprinklers for 200 sq. ft. of space. But the main floors were planned for the spacing of timbers 20 ft. long on 4-ft. centers, leaving 3 ft. between timbers, and establishing a plain surface under the floors measuring approximately 3 x 20 ft., or 60 sq. ft. As a result, five sprinklers were required instead of four in a given 20 ft. square, an increase of 20 per cent. in the sprinkler cost over what was required for the same total roof area.

In this particular case, where the sprinkler equipment was installed on the basis of \$3 per head, the cost for two floors was about \$800 more than would have been necessary if it had been given an opportunity to serve the minimum area of 100 sq. ft. Here the expense of a framing arrangement to secure the minimum cost of sprinkler system per square foot would have increased the size of timbers, while increasing their spacing on centers at a cost probably about equal to the saving in sprinklers. But in another building, in the same group, designed on different lines, the opportunity for a net saving was sufficiently manifest to attract attention and suggest the necessity of giving thought to a matter not often considered.

### Continuous Foundry Systems

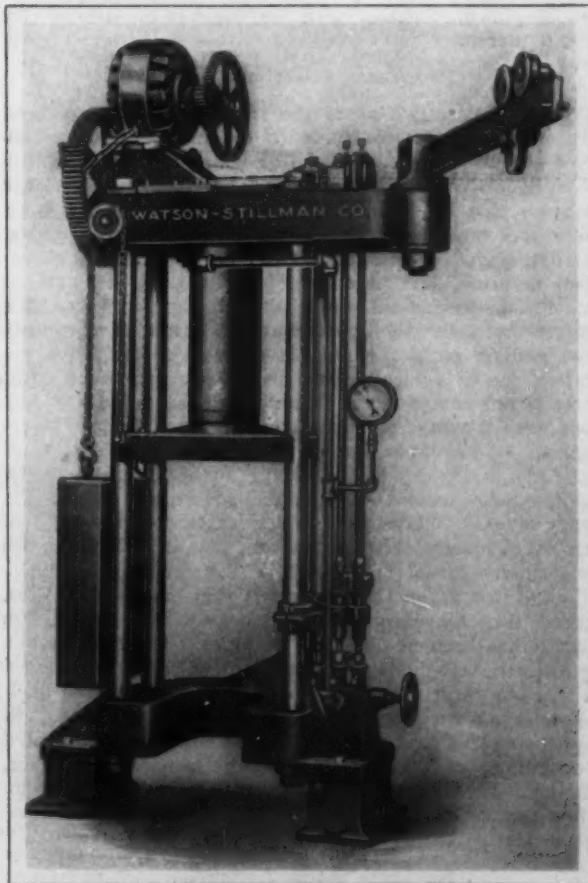
In a leaflet recently issued by the Hooper-Falkenau Engineering Company, New York, a general statement is made of the features of continuous foundry systems. Such systems are designed to save losses in time, space and effort required in shoveling sand and in carrying molds, flasks, iron and castings. In answering the question, What is the minimum tonnage to which continuous foundry methods are applicable? it is stated that the idea is entirely erroneous that there is a direct relation between foundry methods and tonnage. It is urged that while it is evident that foundry with a large tonnage can use the continuous system successfully it is equally true that a foundry with a small output may derive still greater benefit, since the labor per ton of castings is much more. There are now fifteen or more continuous foundry systems in operation in this country, some of them dating back 20 years. The mother patents covering the method have practically expired. The abandonment of several continuous systems is attributed to insufficient investigation by owners and builders. It is noted that all operations do not cease during the entire period that the conveying apparatus is stopped, since sufficient capacity is provided at each operation to give the necessary elasticity. In the first system, handled by Mr. Hooper, the machinery was stopped but 2 per cent in a year's time, this including delays for changes of patterns, on account of hot weather and for all other causes. One system in a large foundry involves the use of a mold nearly 7 ft. square, weighing complete with cores nearly four tons.

At the annual election last week of the Wagner Electric Company, St. Louis, Mo., W. A. Layman was elected president and general manager, former President S. M. Dodd being made chairman of the board. The other officers are J. W. Bell, vice-president; Albert Blair, secretary; W. S. Thomas, treasurer; M. S. Allcorn and W. S. Thomas, assistant secretaries; Walter Robbins, assistant general manager, and S. M. Dodd, W. K. Bixby, Thomas H. West, J. W. Bell, A. Blair, J. Campbell and W. A. Layman, directors.

### Hydraulic Locomotive Journal Press

For pressing journal-box bearings into and out of place, the Watson-Stillman Company, 190 Fulton street, New York City, has recently completed a hydraulic press for F. F. Gaines, superintendent of motive power of the Central of Georgia Railway. Although this press was designed primarily for removing and inserting bearings in locomotive journal boxes, it can, nevertheless, be used for broaching, key-seating, putting gears on shafts, pressing bearings, handling mandrels and general railroad shop work where heavy pieces have to be forced together.

From one end of the press a crane bracket and beam are extended, thus enabling the work to be swung into the press without very much manual labor. Upon the



A New Hydraulic Press for Inserting and Removing Locomotive Journal Bearings Built by the Watson-Stillman Company, New York City

pedestal at the top of the press is mounted an electric motor which drives the pump shaft through back gears and upon the other end of the shaft are located the two pump eccentrics. The pump pistons are both  $\frac{3}{4}$  in. in diameter and have a stroke of 2 in., the legs supporting the pedestal acting as reservoirs for the pumps. In the press shown the operating valve is a single screw stem valve which releases the pressure from the work when it is opened and starts the ram down when closed. To prevent the press from becoming dangerously overloaded a safety valve is installed in connection with the pump. Two sizes of hydraulic press having capacities of 60 and 100 tons respectively are built and it can also be furnished for operation by hand power or a belt drive if desired.

The Publicity and Industrial Bureau of Ottawa, Canada, has issued an attractive 48-page booklet calling attention to the advantage of that city as the great cheap power city. After a brief table giving the principal points of interest about the city, the facilities which it affords for the manufacturer and the capitalist are taken up and discussed. Half-tone engravings showing views of the city as well as illustrations of the principal buildings are scattered throughout the booklet. A six-page list of the different industries located in the city is given and a folding map of the city and its environs is included.

# Iron and Steel Scrap in the Chicago Market

## A New Alignment Due to Noteworthy Changes in the Trade Which Have Developed in Recent Years—No Great Accumulations

BY T. J. WRIGHT

It is quite apparent, even to the casual observer, that some noteworthy changes have taken place in the Chicago scrap market which have an important bearing on the present situation. Since these changes are the result of developments covering a considerable period, it seems worth while to review the causes that have led up to the new alignment, together with the features of interest collateral thereto.

### Two Years of Declining Prices

For the past two years the trend of values has been almost steadily downward, with the exception of a few brief periods of reaction, each of which quickly gave way to more pronounced depression. The common experience in years past has been that after a prolonged stretch of low prices scrap has accumulated in dealers' yards, and at the first signs of renewed activity only a slight improvement in prices was needed to bring out all the material that the market would stand. At this time, however, this rule seems to be wholly inoperative. Prices have already advanced on an average of \$1 to \$1.50 a ton above the bottom line of values reached before the turn came. But there is not enough scrap coming into the market to produce even a temporary recession in values through oversupply. It was first thought that this unexpected result was due to the holding of large quantities of stock by dealers, who were unable to unload without taking too heavy a loss. While this is doubtless a contributing factor, developments seem to indicate that it is at least not the primary cause. The truth is that the entire tonnage of scrap tied up on this account is very small—much less, indeed, than the normal average, or, for that matter, less than it has been at any time in years. Three years ago an estimate was made of the amount of scrap then stored in Chicago yards and it was found that three of the leading dealers were carrying approximately 125,000 tons. All these concerns were strongly capitalized and operated speculatively on a large scale. In the meantime, however, all three have liquidated and gone out of business and, while one or two new firms have started up, their place in the market has by no means been filled.

### No Large Stocks Accumulated

As matters now stand there is not nearly the scrap storage capacity in Chicago yards that there was three years ago. Neither are the existing yards carrying anything like a proportionate amount of stock. For more than a year dealers have adhered to the policy of quick turns, taking into their yards as small a portion of their purchases as possible. By a gradual process, therefore, they have diminished their holdings so that they have relatively little now on hand and scarcely anything that they care to sell at the present range of prices.

The only large accumulation in the Chicago district to-day is held by the Atchison, Topeka & Santa Fe Railroad Company in its yards at Corwith. This is variously estimated between 50,000 and 75,000 tons, with the probability that it is nearer the latter than the former figure. It has been positively stated that no part of this stock will be moved until there is an advance of several dollars a ton from the present price; and that the determination has been expressed to carry it another year if necessary. This, then, is not available for present market requirements and need not be taken into consideration. There is, of course, more or less miscellaneous material being carried by the smaller dealers which will foot up a considerable tonnage. The large part of it, however, is of a more or less inferior grade, such as can only be sold to advantage on a strong market and it is an exception to the rule stated above in that it has cost the owners considerably more than they could realize for it now. Its purchase having been financed largely by banks, there is no course open to them but to hold on. A number of

such dealers, in reply to inquiries upon this point, have said that they will not move any part of their stock until prices are considerably higher than they are now.

With no large reserve stocks available to draw from, the market is practically dependent upon the railroads and manufacturers for its current supply. It is the practice of most of the Western roads to move scrap as fast as it is picked up and sorted, but there is very little opportunity for the prosecution of this work during the winter months except in southern territory. Naturally, therefore, shipments, even normally, cannot be very heavy during the winter. Manufacturers other than the steel mills are not enthusiastic about moving their scrap at the prices which prevail and have been contented to let it pile up. Taken altogether, there seems to be good and sufficient reason for the absence of the usual rush of offerings on an advancing market.

### The Wrought Scrap Situation

As a rule, the bar mills follow a forehanded policy with respect to their scrap supply. It appears now that the mills of this district are, almost without exception, short of scrap and in some cases are said to be unloading direct from car to furnace. Until the past few weeks the outlook for their business has not been such as to justify stocking up and they have been operating upon such a small scale that it was possible to pick up material enough, in small lots and at bargain prices, to keep them going. But the recent placing of large car orders and other railroad business, together with a better outlook generally, has produced a sudden change in the entire situation. At the outset the mills booked a large amount of business, believing they would have no difficulty in picking up scrap enough to fill the orders. Very soon it was found that however much scrap there might be in the country, not much of it was available. The scramble for wrought grades offered in recent railroad lists gives evidence of the urgent demand from this quarter.

### Speculation Less than Formerly

Another marked feature of difference between present and former methods, observed in this market, is the decline in speculative dealing by brokers. An almost unvarying succession of losses sustained in efforts to anticipate the course of prices during the past year or more has discouraged further attempts at speculation. For years brokers have been accustomed to make sales from time to time, when the material was not in hand, trusting for their profit to changes in the market that might come in the time intervening before delivery. Now, however, the practice of buying and selling strictly on the market is being closely adhered to by all interests. There are, in consequence, no short or long interests of any moment and values are not affected by artificial influences.

One peculiarity of the Chicago market is its restricted outlet for heavy melting steel. There are in effect but two consumers of this grade of any consequence—the Inland Steel Company and the Grand Crossing Tack Company. Both are said to be well supplied; at least they are not compelled to come into the market for immediate requirements. It is not so surprising, therefore, that melting steel, which usually leads all other grades in demand, should be lagging behind in this movement. So long as the spread between the price here and at Pittsburgh does not admit of shipment to that or other points, there is no need for local consumers to overbid the market.

### St. Louis Supplies Not a Factor

The St. Louis market in the past has been an available source of supply when more direct channels have failed to furnish enough material to meet local requirements. Brokers have at times found it profitable to meet their



contract obligations by shipments from St. Louis and such trades were by no means uncommon. But for a year and a half or more there has been no occasion to extend operations in that direction, for the reason that the supply available in this market through more direct channels has been sufficient to meet all demands. Now, when it might be desirable to draw upon the St. Louis market, it is found that the conditions operative here likewise prevail there. Stocks there have also been depleted during the long period of depression and brokers say that shipments from that source are, for the time being, at least, out of the question. Being the principal market for the West and Southwest, St. Louis draws country and shop scrap from a wide area, reaching as far south as Texas and Louisiana. It also secures a large tonnage from the railroads centering there. That it is no present factor in the Chicago situation simply goes to show the widespread effect of low prices in retarding the collection and marketing of scrap, which furnishes a substantial reason for the limited available supply at this time.

## New Publications

### Industrial Depressions, or Iron the Barometer of Trade.

By George H. Hull. Pages 227. 8¼x5¾ in., with diagrams, tables and appendices. Published by Frederick A. Stokes Company, New York. Price \$2.75 net.

In the many years of his connection with the pig iron trade Mr. Hull has written much on the bearing of prices of iron and steel on industrial depressions. The iron trade is familiar with his advocacy of the carrying of considerable stocks of pig iron in warrant yards as an equalizing influence, his contention being that such stocks, which could be drawn upon in times of rapidly increasing consumption, would tend to prevent the spectacular advances in prices noticed so frequently in the history of the American iron trade and followed by equally rapid declines.

In his book Mr. Hull analyzes the causes of industrial depressions with a view to proposing a practical remedy for such as result from industrial derangements. He distinguishes periods of industrial depression from financial panics and points out the confusing effect of confounding the causes of the two. He discusses at length the nine periods of industrial depressions, as distinguished from panics, which have occurred in the United States and Europe since 1800. The theories propounded by various investigating commissions are considered and the remedies that have been proposed. He says of the efforts of nine government commissions in seven different countries to discover the causes of depressions that these investigations have left the subject almost as much a mystery as before. The conclusion Mr. Hull reaches, and which he approaches with great deliberateness, withholding a direct statement of it through many chapters, is that the high price of construction is the cause of industrial depressions. He contends that the history of each depression shows that it was preceded by an abnormal advance in the cost of construction, and that no such advance in prices of construction has ever taken place which was not followed by an industrial depression. In his chapter proposing the remedy he says:

What the industries have suffered from most in the past is the lack of knowledge as to the volume of construction under contract for the future, and the capacity of the country to furnish construction materials in the future. What the industries most need, therefore, is monthly information of the future demand for construction materials as far ahead as construction contracts are entered into, and monthly information of the capacity of the country to produce construction materials as far ahead as the increase or decrease in capacity can be known.

It has been the absence of knowledge of the future conditions of supply and demand which has been responsible for the great irregularities in these two conditions. The furnishing of this knowledge of the future should therefore bring about such a perfect adjustment of these two conditions that booms and depressions, as far as they are the result of this particular derangement from within the industries themselves, would be substantially done away with.

To restore prosperity, therefore, the low prices which stimulate investment construction must be reached, whatever these prices may be, and to continue prosperity the abnormal demand which causes high prices must be prevented. The proposed remedy will not only show the

public to how low a level prices must drop to restore prosperity, but will show when that level has been reached, and thus do away with the danger of prices going so low as again to stimulate an excessive demand. The producers and consumers of the country will simply be working in the light, instead of working in the dark, and the extremes of demand, supply and prices will probably never recur to any abnormal extent.

It may be that the route by which Mr. Hull arrived at his conclusions, as just quoted, should be traversed with much more deliberation than we have given to that task, but we confess we have not found that he establishes a better title to the discovery of the real cause of depressions than the investigators whose findings he rejects as inadequate. In fact, in all the writing on panics and depressions there is such a mixing of causes, effects and concomitants as becomes well-nigh bewildering; and it is questionable if the most eminent economist the country has known could propound an explanation and a remedy for depressions and have them accepted by any considerable number of his readers. But while Mr. Hull's diagnosis and prophylactic may seem as inadequate to fend the evils of depressions as was his whilom advocacy of a pig iron reservoir as a means of preventing iron trade fluctuations, he has produced a book of unusual interest and value.

**The Immigration Problem.** By Jeremiah W. Jenks, Ph.D., LL.D., Professor of Economics and Politics, Cornell University, and W. Jett Lauck, A.B., formerly Assistant Professor of Economics, Washington and Lee University. Cloth; 496 pages. Publisher, the Funk & Wagnalls Company, 44 East Twenty-third street, New York. Price, \$1.75.

Those who desire timely and exhaustive information on this subject, and there are very many of our citizens who are interested in it, will do well to secure a copy of this book and read it carefully. It is a condensation of the data collected by the Immigration Commission authorized in 1907 and composed of three Senators, three Representatives and three publicists. The report of that commission comprises 42 volumes. Dr. Jenks was a member of the commission and Professor Lauck, his associate in the authorship of the volume under consideration, was superintendent of its field agents. They therefore were directly engaged in collecting and preparing the enormous mass of facts and figures which the Government has put forth. They have done a valuable service in presenting in compact and condensed form the most important results of the work of the commission.

The contents are treated under a number of general headings, among these being the following: Causes of immigration; characteristics of immigrants which affect American institutions; social problems of recent immigration; living conditions and congestion; the immigrant as a dynamic factor in industry; agencies of protection, distribution and assimilation.

The subject is handled not only from an American standpoint, but also from its European aspect. Immigration to the United States is shown to have a beneficial result upon European countries. An investigation made by the Italian Government brought out the fact that the returning emigrant exerts an influence in his community greater than the benefit of any laws that the government could pass, and better than any training which it could give the people, by carrying back with him the American spirit of intelligent enterprise which makes of him a much worthier and more hopeful citizen. The statement is made that about 40 per cent. of the new immigrants from southern and eastern Europe return to their home country after a short period of residence here and some 30 per cent. of all those coming to this country return home to make their permanent investments and remain.

It is interesting to note that although the great transportation companies which derive an income from immigrant movement are prohibited under the laws of most countries from picturing the prosperous conditions of the United States or the comforts and delights of travel, they nevertheless, through their agencies, stimulate many to come. This work is done in secret but is prosecuted with vigor, as the keen competition for steerage business stimulates the efforts of the transportation companies. It is stated that no European countries are now assisting their paupers or criminals to come to this country. This was done to a

great extent in earlier days, but the stringent laws of the United States have unquestionably been potent in stopping the practice.

The conclusion is drawn that there seems to be little need of further legislation to exclude paupers or those likely to become a public charge, but, on the other hand, it seems desirable that more effective measures be taken to prevent the further admission of criminals, both those coming as immigrants and passengers on our steamers, and especially, perhaps, those coming as alien seamen with the intention of entering the country by desertion. Hearty approval will be given to the statement made that efforts should be put forth to secure the better distribution of the immigrants. It is pointed out, however, that legislation is needed in the direction of further restriction of general immigration on account of our present industrial conditions. It is urged that the great increase in the immigration of late years has been such that there has been beyond doubt a strong tendency toward the lowering of the standard of living of our industrial laborers.

### Cast Iron Pipe Prices from 1900 to 1911

The accompanying diagram, furnished by Daniel Runkle, of the Warren Foundry & Machine Company, 111 Broadway, New York, shows the course of prices for the past 12 years on 6-in. cast iron water pipe, 30 lb. per foot, f.o.b. New York City, in carload lots, per ton of 2000 lb. For those who desire the tabulation of prices on which this diagram is constructed the following average monthly prices are presented:

	1900.	1901.	1902.	1903.	1904.	1905.
January	\$27.50	\$21.75	\$24.50	\$29.25	\$24.50	\$28.50
February	26.75	22.25	25.00	29.25	24.25	28.50
March	26.75	21.50	26.25	30.75	24.25	26.75
April	26.50	22.00	26.00	31.00	24.25	27.00
May	26.00	22.25	27.75	30.75	24.00	27.25
June	24.50	23.00	28.00	30.75	23.50	27.25
July	24.75	23.75	28.50	30.75	23.50	27.25
August	23.50	23.75	29.50	29.50	23.50	27.75
September	22.25	23.50	29.50	29.00	23.00	27.25
October	21.75	24.00	29.50	26.00	23.25	28.25
November	21.75	24.50	30.75	24.50	25.00	29.00
December	21.75	23.75	29.25	24.25	27.00	29.25
	1906.	1907.	1908.	1909.	1910.	1911.
January	\$29.75	\$34.25	\$27.00	\$24.50	\$24.75	\$24.75
February	29.50	34.25	26.75	24.25	25.50	24.00
March	30.50	34.00	26.25	25.25	26.00	23.75
April	29.75	33.50	26.25	25.00	26.75	23.50
May	31.00	34.25	26.25	25.25	27.50	24.50
June	32.50	33.50	25.75	26.00	27.00	24.50
July	30.25	34.00	25.75	26.25	27.00	24.25
August	30.50	32.50	25.25	26.00	26.50	24.00
September	31.00	33.00	25.75	25.75	25.00	24.00
October	33.00	33.50	25.75	25.50	24.75	24.00
November	33.25	28.50	25.00	27.00	23.50	24.00
December	35.50	28.00	25.50	27.25	22.75	23.50

**Traffic Through Sault Canals.**—In the season of 1911 the total amount of freight carried through the canals of Sault Ste. Marie, Michigan and Ontario, was 53,477,216 net tons, of which 30,731,235 tons was iron ore and 412,269 tons pig iron and manufactured iron and steel. These figures compare with 62,363,218 tons, 41,603,634 tons and 444,669 tons respectively, in 1910. The pig iron shipments for the past year were 40,095 net tons.

The Spencer Otis Company has moved its Chicago office to room 747, Railway Exchange. A new feature has been introduced in exhibiting several devices sold by the company. The American Kron scale for railroad work is shown in all sizes and capacities. The Au-Tra-Kar for boring holes and driving screw spikes is set up under power. Several gasoline-propelled cars for railroad work are exhibited. This company also has offices in New York, 2 Rector street; St. Louis, Syndicate Trust Building; St. Paul, Pioneer Press Building; Detroit, Ford Building; Norfolk, Va., Dickson Building; Atlanta, Ga., Fourth National Bank Building, and in a very short time will have offices in San Francisco.

A copy of the report of the Water Supply Commission of Pennsylvania for the year ended December 31, 1909, has been received from John Birkinbine, president of the commission. The report comprises 240 pages and gives valuable information regarding the water supply of the State. A complete list is given of water and water-power companies. Among interesting features of the report are historical notes regarding the introduction of water works systems in the State.

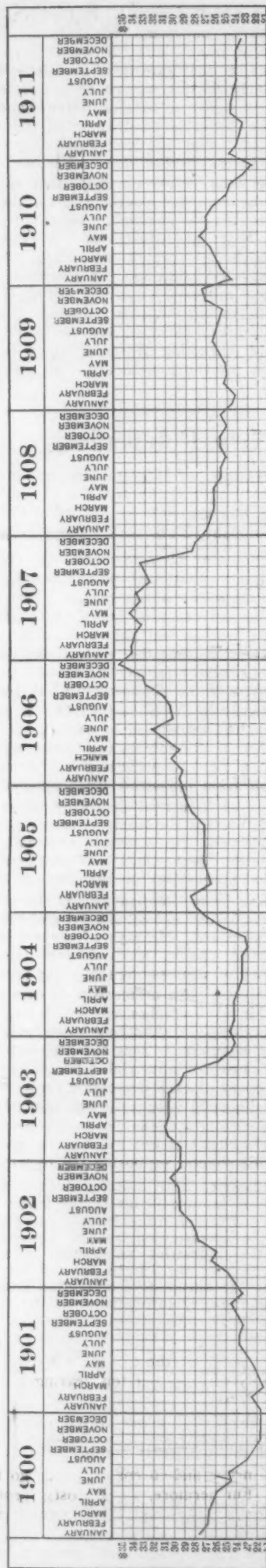


Diagram Showing the Course of Prices of Cast Iron Water Pipe for the Past Twelve Years. The Diagram is Based on the Price of 6-In. Pipe, Weighing 30 Lb. to the Foot, f.o.b. New York City, in Carload Lots, Per Net Ton of 2000 Lb.



# The Government's Report on the Cost of Steel

## Attention Directed to the Prices of Lake Ores —A Comparison of Costs of Large, Integrated Companies with Those of Smaller Companies

Herbert Knox Smith, Commissioner of Corporations, submitted to President Taft January 22 his preliminary report on the cost of production of iron and steel, this forming Part II of his investigation of the steel industry.

The report deals in its early chapters with the cost problem and gives the average book cost of the chief raw materials and products of iron and steel in 1902-1906. It compares these with the costs of the present time. A chapter gives very fully the cost of the Steel Corporation in 1910. Others are devoted to the approximate investment in raw materials, plant and working capital to produce Bessemer rails from Lake ore, and to the important bearing of the profit on ore upon costs and profits of finished products and on competition. In the letter of submittal Commissioner Smith says: "The cost of steel making is a basic industrial fact, which bears on tariff legislation, prices and profits in a great industry, and the concentrated control of a great natural resource. The bureau has used the actual records of companies covering, roughly, two-thirds of the country's production of iron and steel for 1902 to 1906. These data are most complete. More limited figures for 1902 to 1910 make it clear that these five-year figures substantially represent present conditions also."

### Intercompany Profits and "Book Costs"

It is stated that many of the companies investigated are highly "integrated," there being various subsidiaries owning mines, blast furnaces, steel works, etc.

"Their cost sheets, however, did not correspond with this integration. The costs of each subsidiary were shown as though it were independent, and included profits paid to other subsidiaries. To illustrate, one subsidiary of a combination operating blast furnaces would pay to another subsidiary which mined ore a price for ore that included a profit to the ore company. This price would, however, be entered by the furnace company as a part of its costs. That is, they were 'book costs,' and they included considerable profits really received by the same interests.

"These intermediate profits are very important. For example, the average "book cost" of Bessemer pig iron over the five-year period was \$13.89 per ton. "Transfer" profits were \$1.79, leaving a net cost of \$12.10. The Bureau deducted these intermediate "transfer" profits for all the important simpler products. The resulting "revised cost" must, however, be handled with great caution. The margin between this revised cost and the selling price is, of course, much larger than the margin over the "book cost"; but, on the other hand, that larger margin must cover all the stages of production, and therefore a much larger investment. The profit above the "book cost" of a subsidiary is to be applied simply to the investment of that company. On the other hand, the profit above the revised cost of an integrated company, carrying through many stages of production, must be set against that entire investment."

### Rail Mill Cost and Investment

The report takes up the cost of steel rails for the five years, 1902 to 1906, and says:

"Starting with the chief raw materials, ore and coke, the 'book cost' of ore for the five-year period was \$2.64. The only 'transfer' profit in the cost of ore itself was an intercompany royalty of \$0.02 per ton, leaving a net average cost of ore of \$2.62.

"For Connellsville coke, the principal kind used, the cost was \$1.43 (net ton), with no intermediate profits.

"Passing now to the next step, Bessemer pig iron. Intermediate profits in ore and in coke, as they go into pig iron, are large. Furthermore, these costs, profits and freights to the furnace are multiplied because it takes

about 1.8 tons of Bessemer ore and over 1 net ton of coke for 1 ton of pig iron. The average book cost of the ore for 1 ton of pig iron was \$7.36; coke, \$3.81, and limestone, \$0.43. The so-called 'cost above materials,' necessary for converting that ore into pig iron was: Labor, \$0.73; other operating cost, \$0.80, and depreciation and general expense, \$0.76. The total makes a book cost of pig iron of \$13.89. Taking out now the transfer profit, \$1.79, there is left a net cost of \$12.10.

"Advancing to Bessemer rail ingots, there appears a book cost of \$17.59. All the preceding intermediate profits, however, have been carried forward in the book cost of the raw material, pig iron. Thus, the total 'transfer' profits for ingots were \$1.84, leaving a net ingot cost of \$15.75.

"For heavy Bessemer rails, finally, the book cost was \$21.27. This is based on the book cost of ingots. The final transfer profits were \$2.47. Deducting these leaves \$18.80 as the revised cost. The total difference is thus a very considerable amount. About one-third of this revised cost was for labor in all stages of production, as appearing directly in the cost sheets.

"The relation of these integration profits to entire integration investment may be roughly illustrated here. The price of Bessemer steel rails has been fixed for over 10 years at about \$28 a ton. The cost, eliminating transfer (but not transportation) profits, is \$18.80 per ton. This leaves a margin of \$9.20. The total mining and manufacturing investment (excluding transportation properties) actually behind this steel-rail production, from ore to rails, is from \$80 to \$55 a ton. On this investment the margin, \$9.20, represents a profit of from about 11 to 17 per cent. The margin between revised cost and price must in this way be distributed over the entire investment thus attributable to the product in question."

### Large Company and Small Company Costs

Referring to the difference in costs of large companies which are integrated and small companies which are not, the report says:

"A good example here is Bessemer billets. In this product intermediate profits have also accumulated through ore, coke, pig iron, etc. For the group of large companies the book cost of billets was \$19.89; for small companies, \$22.54. The difference was \$2.65. But now taking out transfer profits, the cost for large companies was \$17.56, and for small companies \$21.69, a difference of \$4.13 between the two. The large companies represented here included the Steel Corporation, the Republic, Lackawanna and Jones & Laughlin steel companies.

"Part of this difference in favor of large companies must, of course, cover a greater investment, due to higher integration; part is due to superior efficiency resulting from such integration; but part represents also monopolistic control, especially in ore. In so far as this difference means a larger per cent. of return on each dollar of investment, it is a real difference in industrial position between the two groups. This difference must be considered in any public action affecting both classes of companies.

"A broad survey of 'book costs' of steel products can be obtained from the following table. These costs have not been revised, and therefore include considerable transfer profits:

Products	Unrevised Book Costs	Total cost
Open-hearth billets.....		\$20.87
Universal plates.....		21.82
Structural shapes.....		26.52
Merchant bars.....		28.12
Wire rods.....		27.21
Bright coarse wire (net tons).....		26.12
Black sheets (net tons).....		39.37
Tin and terne plate.....		71.23

### Steel Corporation Advantages

"The Steel Corporation is by far the most highly integrated concern in the industry. It not only makes pig iron, steel and most of the various rolled products, besides some more elaborated articles, but it also mines its own ore and coal, produces its own coke and does all this more completely than any competitor."

The costs of the Steel Corporation are especially reduced if these intermediate profits are excluded, as is shown by the following examples for 1910:

Products	Company cost	Integrated cost, excluding inter-company profits
Lake ore.....	\$2.88	\$2.40
Bessemer pig iron.....	14.39	10.21
Bessemer standard rails.....	21.53	16.67

"The most significant profits were those on ore and on railroad transportation. In so far as the Steel Corporation enjoys monopolistic power, it lies chiefly in these two factors." The corporation, the report declares, "has acquired unduly large ore reserves, holding at the close of 1910 at least 50 years' supply at the present rate of consumption. Exclusive of the Great Northern Ore properties, the lease of which has been canceled, effective January 1, 1915, it is estimated that the corporation has fully 1,200,000,000 tons of other ore in the Lake region."

The average cost of Lake ore generally delivered at lower ports from 1902 to 1906 was \$2.64 per ton. The average transfer profit on ore was 66 cents per ton. This is regarded as excessive by the commissioner, representing, in his judgment, from 10 to 15 per cent. on the investment, "with the presumption in favor of the higher rate," and including earnings on the large ore reserves which are entirely inactive at this time. It may be stated, as a notorious and incontrovertible fact, that the price of Lake Superior ore during the greater part of the period 1902 to 1906, and, indeed, back to 1895, has been established in large measure by agreement among the principal ore-producing interests.

The excessive profits on ore, the report says, handicap effective competition in the production of pig iron and steel by concerns which must go into the open market for their ore. The transportation profit of 60 cents a ton realized by the Steel Corporation on its own ore over its principal ore-carrying railroads and in lake vessels from 1902 to 1906 was "grossly excessive," the report alleges. As evidence of this, it is added, "the corporation recently reduced the rates on its two principal ore roads. It is safe to assume that the present reduced rate of 60 cents per ton is still excessive.

### Lake Ore Prices

"The prices of Lake ores have been kept for many years at an unreasonably high level, compared with the cost of production and the cost of the investment in the producing ore properties. Consequently, integrated concerns, transferring such ore to the pig iron producing departments of the business at those high prices, necessarily show an unduly high book cost for pig iron and for various steel products made from pig iron.

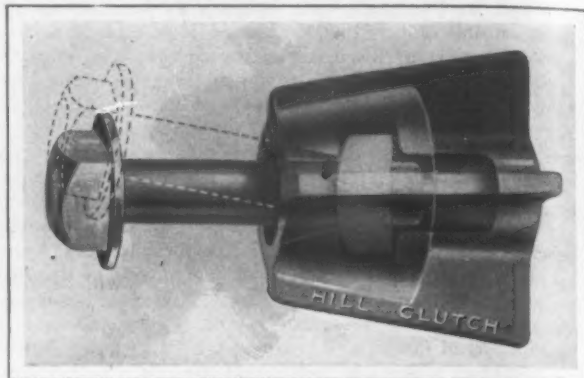
"This policy in regard to ore prices has two important results. For companies selling ore it tends to make remunerative the investment in vast ore reserves which are not at present utilized, and to unduly enhance the value of such properties. It also tends to make the cost of iron ore excessively high to companies which must purchase it in the open market, and thus prevents them from becoming effective competitors in pig iron or in steel products made therefrom."

### Segregation of Ore Railroads

One of the conclusions of the report is thus stated: "The situation clearly raises the question whether the interests of the public may not require the segregation of these railroad properties from the Steel Corporation. It would thus stop what is unquestionably an evil, and that is the imposition of high rates upon competitors' shipments, which puts them at a great disadvantage, while, at the same time, forcing them by reason of this very fact to contribute unduly to the profits of the Steel Corporation on transportation."

### A New Shafting Anchor

The Hill Clutch Company, Cleveland, Ohio, has recently brought out a new anchor for use in buildings constructed of concrete. Although designed primarily for supporting shafting, the anchor can be used for various other classes of service in connection with concrete construction. It can be used either as an overhead support or a hanger or can be reversed and used as a foundation bolt. Two of the special features of the anchor are a class of construction which has produced a strong light



A New Anchor for Supporting Shafting in Concrete Buildings Designed by the Hill Clutch Company, Cleveland, Ohio

casting possessing great holding power in tension and torsion and the use of an inserted nut in the body casting.

The nut inserted in the casting with the chamfered face on the seat is free to oscillate and it is prevented from turning by abutments. This feature of the design allows the bolt to be inserted at a considerable angle, as is indicated by the dotted lines in the engraving, and still enter the nut, an arrangement which takes care of discrepancies in the setting of the anchor. As will be noticed from the engraving the anchor is shaped like the frustum of a cone and its shape together with the longitudinal rib, it is pointed out, combines to produce a strong light casting possessing great holding power in tension and torsion.

The anchor is made in five sizes to accommodate bolts ranging from 1/2 to 1 in. in diameter and from 3 to 6 in. in length. A standard 3/4-in. anchor fitted with a 3/4-in. bolt 4 1/2 in. long when tested withstood without injury a pull corresponding to a stress of 20,000 lb. per square inch, which is more than double that to which the bolts are usually subjected in ordinary practice.

### Dunderland Iron Ore Concentrating Plant

A meeting was held in London, December 28, of the shareholders of the Dunderland Iron Ore Company, Ltd., which in 1906 started up an extensive iron ore concentrating plant at Guldsmidvik i Ranen, Norway, the Edison process being employed. More than \$10,000,000 was spent by the company in acquiring ore property and installing plant. In 1909 it was announced that the enterprise was a failure because of a succession of misfortunes. The difficulties encountered were excessive dust and spillage from conveyor belts, shortage of labor, conveyor breakdowns, imperfect drying of the crushed ore and inefficiency of the hematite magnets without automatic cleaners. Some further capital was raised and a part of the plant is now in operation. It was stated at the shareholders' meeting that contrary to the general report that all the plant was a failure only one section has failed; namely, the magnetic separation plant. The rest is in good working order, capable of treating and handling cheaply a large amount of ore. A proposition is now about to be submitted for the reorganization of the company's capital and finances. Some money must be spent on existing conveyors and parts of the crushing plant.

Fire destroyed the building which housed the forging department of the Philadelphia Steel & Forge Company, Millnor and Bleigh streets, Philadelphia. The machinery sustained but little damage and a temporary building will be erected so that this department of the plant will again be in operation in a short time. Operations in other departments will not be interfered with.



### The Joslyn Mfg. & Supply Company

The Joslyn Mfg. & Supply Company, 1101 Chamber of Commerce Building, Chicago, has announced an increase in its capital stock from \$100,000 to \$150,000, to provide for the erection of its own plant for the manufacture of electrical hardware and line supplies. This company has been a distributor of the materials it now plans to manufacture, and, in thus arranging to control its own source of supply, seeks to improve its shipping service in electrical hardware materials to the same efficiency it has developed its other lines. B. S. Handwork, formerly sales manager in the Chicago office of Hubbard & Co., Pittsburgh, has resigned from that connection to become associated with and acquire an interest in the Joslyn Company as factory manager.

The company has completed plans and specifications for its factory additions at Thirty-seventh and Morgan streets, Chicago. Its hardware product will be worked up from mill stock, and the factory machinery will include the necessary equipment for the manufacture of this line of material. A hot galvanizing plant will also be installed. It is claimed for this proposed plant that it will be the only one west of Pittsburgh manufacturing the complete line of hardware specialties for electrical purposes exclusively.

### The Brier Hill Steel Company

The Brier Hill Steel Company, recently organized at Youngstown, Ohio, has been incorporated under the laws of Ohio, with a capital stock of \$15,000,000, the incorporators being H. H. Stambaugh, John Stambaugh, David Tod, John Tod, E. L. Ford, R. C. Steese, J. G. Butler, Jr., and W. A. Thomas. A meeting of the incorporators will be held January 29, at which the following officers will be elected: W. A. Thomas, president; R. C. Steese and J. G. Butler, Jr., vice-presidents; John Stambaugh, treasurer; J. D. Waddell, general manager of sales; Claude R. Thomas, purchasing agent; J. E. Parker, formerly of the Brier Hill Iron & Coal Company, secretary; C. H. Rose, formerly of the Thomas Steel Company, auditor. The advisory board will consist of E. L. Ford, John Tod, David Tod and H. H. Stambaugh. W. A. Thomas, president Thomas Steel Company, had charge of the negotiations by which the Empire Iron & Steel Company was taken over by the Brier Hill Steel Company. The new company will open offices in the Stambaugh Building, Youngstown, February 1, ready to do business. It is stated, but not confirmed, that Joseph A. McDonald will be general superintendent.

### Dominion Steel Stock Issue

At a special meeting January 18 stockholders of the Dominion Steel Corporation approved the proposal of the directors to issue \$7,000,000 of 6 per cent preferred stock, to be exchanged for the 6 per cent income bonds of the subsidiary companies, the Dominion Iron & Steel Company and the Dominion Coal Company. The total authorized preferred is \$17,500,000, and it is intended later to offer the unissued balance to holders of Steel and Coal shares at a price to return the present dividend rate and also to pay dividends on Dominion Coal preferred quarterly instead

of semi-annually, as at present. Stockholders will meet again January 29 to ratify again the stock issue, as is necessary according to English laws, under which the company is incorporated.

The Dominion Coal Company, one of the subsidiaries, will have five new collieries in the Lingan district, the best coal section of Nova Scotia; two more in Morien and three others at Springhill, making 10 collieries added to the 10 old ones of the corporation. The expenditures for these and other additions will aggregate \$5,475,000, of which \$3,250,000 is still to be spent. The production this year is expected to total 4,500,000 tons of coal.

At the Dominion Iron & Steel Company's plant new coke ovens, two additional blast furnaces and other machinery will increase the possible output to 450,000 tons, as against 250,000 tons in 1909.

### The Interstate Hardware & Supply Company

The Interstate Hardware & Supply Company, Bristol, Tenn.-Va., which has purchased the Virginia-Tennessee Hardware Company, was organized January 15 with an authorized capital stock of \$100,000, of which \$89,000 has been paid up. The company employs seven traveling salesmen, covering parts of Virginia, Tennessee, North Carolina, Kentucky and West Virginia. Its business will be exclusively wholesale and it will handle a general line of heavy and shelf hardware, building material, mill supplies, etc. J. A. Stone is president; J. T. Cecil, vice-president; J. F. McCrary, secretary and assistant treasurer, and H. E. Jones, treasurer. Mr. Cecil, who has had 20 years' experience as salesman and buyer, will have active charge of the purchasing and sales department of the business. Mr. McCrary will look after the financial end. The other officers, who will not have an active part in the management, are local capitalists, Mr. Stone being a large manufacturer of lumber and identified with banks and other financial interests of Bristol, while Mr. Jones is president of the Dominion National Bank and is interested in several wholesale manufacturing concerns of the city. The company desires catalogues and price lists from manufacturers, finding that the files of the old company are incomplete in this respect.

### The Empire Iron & Steel Company Absorption

The Empire Iron & Steel Company, Niles, Ohio, manufacturer of sheets and sheet products, announces that on February 1, 1912, its interests will be absorbed by the Brier Hill Steel Company, the formation of which was referred to in *The Iron Age* of January 18. After February 1 all communications relating to the first-named company should be addressed to the Brier Hill Steel Company, Youngstown, Ohio.

### Connellsville Coke Workers' Wages

#### The Changes in the Scale Since 1894

The accompanying table, taken from the Connellsville Courier, gives the changes made in coke workers' wages since 1894, and the dates when the changes were effective. It will be observed that the current rate of wages is the highest that has prevailed in the whole period:

Scale of Wages in Connellsville Coke Region, 1894 to 1912, Inclusive.

Class of work.	Feb. 10, 1894	Apr. 1, 1895	Oct. 1, 1895	Jan. 1, 1896	Apr. 29, 1899	Mar. 1, 1900	Jan. 1, 1903	Dec. 16, 1903	Mar. 1, 1905	Mar. 1, 1907	Jan. 1, 1908	Jan. 16, 1910
Mining and loading room and rib coal, 100 bu.....	\$0.78	\$0.90	\$0.954	\$1.05	\$1.12½	\$1.25	\$1.35	\$1.10	\$1.20	\$1.35	\$1.20	\$1.35
Mining and loading heading coal, 100 bu.....	.88	1.02	1.08	1.20	1.27½	1.40	1.50	1.25	1.37	1.50	1.38	1.50
Mining and loading wet heading coal, 100 bu.....	.95	1.10	1.166	1.25	1.31½	1.45	1.55	1.30	1.45	1.60	1.50	1.62
Drawing coke, per 100 bu, charged.....	.43	.50	.53	.60	.64	.72	.77	.63	.70	.77	.70	.78
Leveling, per oven.....	.08	.09	.095	.104	.10½	.12	.12½	.10½	.11½	.....	.11½	.12½
Drivers, rope riders, (shafts and slopes).....	1.65	1.84	1.95	2.05	2.12½	2.35	2.50	2.20	2.40	2.55	2.40	2.60
Drivers, rope riders, (drifts) full run.....	1.60	1.75	1.855	1.95	2.02½	2.25	2.40	2.10	2.30	2.45	2.30	2.55
Cagers, per full run.....	1.65	1.84	1.95	2.05	2.12½	2.35	2.50	2.20	2.40	2.55	2.40	2.60
Tracklayers, blasters and timbermen (shafts and slopes), per day.....	1.65	1.84	1.95	2.05	2.12½	2.35	2.50	2.20	2.40	2.55	2.40	2.60
Tracklayers, blasters and timbermen (drifts), per day.....	1.60	1.75	1.855	1.95	2.02½	2.25	2.40	2.10	2.30	2.45	2.30	2.55
Assistant tracklayers and inside laborers.....	1.35	1.50	1.59	1.65	1.72½	1.87½	1.97½	1.65	1.75	1.95	1.75	2.00
Dumpers and tippemen, per full run.....	1.35	1.50	1.59	1.68	1.75½	1.90½	2.00½	1.68	1.80	1.95	1.80	2.00
Chargers, per oven.....	.03	.03½	.037	.04	.04½	.04½	.05	.04	.04½	.04½	.04½	.04½
Chargers, per day.....	1.40	1.50	1.59	1.68	1.75½	1.90½	2.00½	1.75	1.85	2.00	1.85	2.00
Forking cars, 40,000 lb.....	.85	1.10	1.166	1.25	1.35	1.50	1.65	1.40	1.50	1.65	1.50	1.65
Forking cars, 50,000 to 60,000 lb.....	.95	1.25	1.325	1.40	1.50	1.65	1.80	1.50	1.60	1.75	1.60	1.75
Forking cars, over 60,000 lb.....	.75	1.00	1.06	1.25	1.35	1.50	1.65	1.60	1.75	1.90	1.75	1.90

# THE IRON AGE

Published Every Thursday by the

**David Williams Company**

239 West 39th Street, New York

W. H. Taylor, President and Treasurer  
I. A. Mekeel, First Vice-President  
Fritz J. Frank, Secretary  
M. C. Robbins, General Manager

## Editors

Geo. W. Cope    A. I. Findley    W. W. Macon

Charles S. Baur, Advertising Manager

## Branch Offices

Philadelphia: Real Estate Trust Bldg.    Chicago: Fisher Building  
Pittsburgh: Park Building    Cleveland: American Trust Building  
Boston: Compton Building    Cincinnati: Andrews Building

Entered at the New York Post Office as Second-class Mail Matter

Subscription Price: United States and Mexico, \$5.00 per Annum; to Canada, \$7.50 per Annum; to Other Foreign Countries, \$10.00 per Annum. Unless receipt is requested, none will be sent. Credit for payment will be shown by extending the date on the wrapper of your paper.

## CONTENTS.

Welfare Work in German Industries.....	239
New Acme Taper Turning Tool.....	241
Concrete Pile Contracts.....	241
A New Bolt for Metal Construction.....	242
The Shuster Wire Straightener.....	243
German Pig Iron Production in 1911.....	243
A New Mumford Valve.....	244
Wrought Pipe Experience in Refrigerating Work.....	244
Guide Arrangements for Small Merchant Mills.....	245
The Vixen Rail Planer.....	246
A New Positive Pressure Blower.....	246
The Natco Multiple-Spindle Drill.....	247
The Watertown Arsenal Labor Trouble.....	248
Bickford Automatic Fluter.....	250
The Oliver Grinder.....	251
Electrically Driven Rotary Sand Sifter.....	251
Springfield Branch, National Metal Trades Association.....	251
The Barnes 26-In. Drill.....	252
Impurities in Iron and Corrosion.....	252
Arrangement of Flooring with Regard to Sprinklers.....	253
Continuous Foundry Systems.....	253
Hydraulic Locomotive Journal Press.....	253
Iron and Steel Scrap in the Chicago Market.....	254
New Publications.....	255
Cast Iron Pipe Prices from 1900 to 1911.....	256
Traffic Through Sault Canals.....	256
The Government's Report on the Cost of Steel.....	257
A New Shafting Anchor.....	258
Dunderland Iron Ore Concentrating Plant.....	258
The Joslyn Mfg. & Supply Company.....	259
The Brier Hill Steel Company.....	259
Dominion Steel Stock Issue.....	259
The Interstate Hardware & Supply Company.....	259
The Empire Iron & Steel Company Absorption.....	259
Connellsville Coke Workers' Wages.....	259
The Underwood Proposed Metal Schedule.....	260
A Loss in British Iron and Steel Exports.....	261
A 54-Hour Law and a Minimum Wage.....	261
Tonnage in Locomotive Construction.....	261
The Proposed Tariff Changes.....	262
The Allis-Chalmers Reorganization.....	262
Watson-Stillman Company to Enlarge.....	262
Personal.....	263
Pittsburgh and Vicinity Business Notes.....	263
New Buying Falling Off.....	264
Iron and Industrial Stocks.....	274
Obituary.....	274
Joseph T. Ryerson & Son's New Offices.....	274
Two New Ore Freighters Ordered.....	274
President Farrell Before the Stanley Committee.....	275
Indiana Industrial Conditions.....	276
A British Pool in Light Iron Castings.....	276
The Machinery Markets.....	277
Carl Still By-Product and Benzol Plants.....	285
Vanadium Steel for Automobiles.....	285

## The Underwood Proposed Metal Schedule

With this issue of *The Iron Age* our readers will receive the text of the bill prepared by the sub-committee of the Committee on Ways and Means of the House of Representatives which is proposed to take the place of the metal schedule in the present tariff act. The bill was made public on Monday and is to be introduced in the House of Representatives this week, and an effort is to be made to push it through that branch of Congress by Saturday. We have interpolated the existing rates in their proper places in our reprint of the bill, so that our readers will be able to make a comparison of the proposed rates with those now in force.

It will be observed that the reports which have emanated from Washington regarding the reductions in duties are fully realized. Those who have taken upon themselves the work of revising the metal schedule have done it with a heavy hand. They have not been animated by any disposition to protect our manufacturers from an invasion of the home market by foreign iron and steel manufacturers, but on the contrary have shown a decided willingness to open the doors to serious competition whenever conditions in this country and abroad are favorable for such a development in trade movements. With the scale of duties proposed, importations would be particularly large at all times on the Pacific coast and on the Gulf coast, and at other times on certain portions of the Atlantic coast.

The free list has been enlarged along the same lines as those of the so-called "farmers' free list bill" which was vetoed by President Taft August 18. Another attempt is here being made to introduce free such commodities as wire fencing and cotton ties, in the evident hope of securing political advantage among the farmers and planters. In placing such highly finished articles on the free list all pretense at a scientific tariff or a proper relation of finished products to raw materials is abandoned.

If prices of iron and steel products here and abroad were permanently to maintain their present relations it might be assumed that the proposed metal schedule would work no serious harm to the manufacturing interests of this country. But our prices are low because of the depression through which we have been passing, while European prices are comparatively high because of the great activity in trade abroad. This state of affairs is neither permanent nor likely to continue for any great length of time. It is abnormal, if for no other reason, because the rates of wages paid here are much higher than those paid in Europe. A restoration of low prices abroad and somewhat higher prices here would make a readjustment of costs necessary in this country that would undoubtedly bear heavily on labor. Those who assume that the manufacturers of this country have gone through such a readjustment of costs, as would discount such reductions in duty as are proposed by this bill are wrong in their premises. The so-called readjustment has so far been simply a reduction in, or loss of, profits by our manufacturers, and has not gone into basic conditions such as a rearrangement of labor schedules and other important elements of cost. These have not yet been touched, it being the hope of our manufacturers that an improvement in trade which would bring about better prices might render such further readjustments unnecessary.



In view of the position taken by President Taft on matters connected with tariff revision, it may be assumed that if this bill should pass both houses of Congress it will meet with his disapproval. The proposed rates have not been the result of an inquiry by any tariff board, but have simply been arrived at by a few inexpert men with no principle to guide them except that of making a heavy cut in iron and steel duties and opening the way for importations.

### A Loss in British Iron and Steel Exports

British iron and steel manufacturers face an unpalatable fact in that their exports fell off in 1911 when those of every other important exporting country showed an increase. The increase was marked in the case of the United States; less so, and yet important, in the case of Germany. Figures just now available show that Great Britain exported 4,519,000 gross tons of iron and steel products last year, against 4,594,000 tons in 1910, a falling off of 75,000 tons. The exports of pig iron were substantially the same as in 1910—1,204,000 tons and 1,206,000 tons respectively—so that the decline was altogether in finished products. Rails show a heavy loss, the total last year being 375,000 tons, or 107,000 tons less than in 1910. Were there not some offsetting gains—as 20,000 tons in galvanized sheets and 10,000 tons in tubes—the loss in rails alone would have made even a poorer total showing for the year.

While the complete figures for the year for the United States and other countries are not yet available, an approximate comparison is possible in the following estimates, taken in part from the Iron and Coal Trades Review, of London:

#### Exports of Iron and Steel—Gross Tons

	Estimate for 1911	Increase on 1910
Germany .....	5,050,000	357,000
Great Britain .....	4,519,000	*75,000
United States .....	2,175,000	639,000
Belgium .....	1,417,000	20,000
France .....	520,000	110,000
Total .....	13,681,000	1,051,000

\*Decrease.

Reserving more extended comment until the official figures for the United States and Germany are available, we note that this tabulation fully warrants the suggestion of our London contemporary that very careful consideration should be given to it in Great Britain, "not only by those actively connected with the iron trade, to whom the facts are more or less familiar, but also by those economists and politicians who believe that all is well with British industry."

### A 54-Hour Law and a Minimum Wage

The result of the operation of the new Massachusetts law restricting the working hours of women and children to 54 hours a week constitutes an interesting object lesson on the danger of overmeddling by legislative bodies. This statute arbitrarily places their maximum working time at 54 hours a week, which is a reduction of two hours from prevailing schedules. The employers very naturally believe that the philanthropists who framed and procured the passage of the act have done a serious injury to a large percentage of the industries of Massachusetts. The employee class would like the law very well, providing that their hourly wage was advanced to a point that would leave no loss in earnings. The factory owners are disin-

clined to increase their labor cost at a time when business is not particularly brisk. The result is an almost chaotic condition in some of the textile mills in that State which employ a large proportion of foreign labor.

In considering the working hours of women and children the public, as a whole, forgets that in a great many cases these classes of labor work side by side with men. The hours of the latter are restricted by those of their women and children associates. It is impossible to separate labor in this respect. When the manufacturer is compelled to close his works for two hours, which have previously been productive, his costs go up correspondingly. His output has been cut down about 4 per cent. His overhead expense is increased correspondingly. In his competition with manufacturers of other States and, even more important perhaps, with manufacturers of other countries he has been given a more serious handicap than would at first appear. In dull times, and in some cases even in moderate times, the difference may be from a profit to a loss. He cannot charge more for his goods and the burden imposed upon his financial resources has been increased.

Coincidentally appears the report of the Massachusetts commission on minimum wage boards which was authorized by the Legislature of 1911. The report urges that wage boards be created to establish a minimum limit of pay for women and children operatives, the reason given being that at the present time the wages paid by some employers are entirely inadequate. If such is the case the Legislature may be criticized for its inconsistency in reducing hours of employment where by so doing it decreases the incomes, already too small, of those it intends to help.

### Tonnage in Locomotive Construction

The great increase within the past ten years in the weight of locomotives has largely increased the consumption of iron and steel in locomotive building, even though in recent years the number of locomotives built has not been as great as in the early years of the past decade. One type of locomotive has followed another so rapidly, with constantly increasing weights, that there seems to be no limit to the possible weight of a locomotive. It is not so many years ago that this weight seemed to be limited because the permissible weight per foot of track was necessarily limited, while the length appeared to be limited on account of the limitations of negotiating curves. The appearance of the Mallet type changed all this by permitting the locomotive to be elongated beyond what had formerly been regarded as the limit.

As a result of these extensions in type we find of late that locomotives are being built of weights (exclusive of tender) up to 400,000 lb., and even in cases exceeding this weight. While 400,000 lb. is not often exceeded, a number of small orders have been placed in the past year calling for locomotives weighing more than 450,000 lb., exclusive of tender. This large increase suggests the ease with which consumption of iron and steel increases. Estimates of future consumption of iron and steel are prone to go astray by failing to recognize the many ways in which tonnages may increase. Ten or 15 years ago an estimate of future requirements for the locomotive trade would probably have contemplated a greater increase by reason of an increase in the number of locomotives built per year than by an increase in the aver-

age weight per locomotive; yet the fact is that the locomotive consumption of iron and steel has increased much more by the weight per locomotive increasing than by the number of locomotives increasing.

A survey of locomotive orders placed in the past year shows that a few locomotives were ordered weighing 150,000 lb. or less, while a few were ordered weighing more than 400,000 lb. The largest number of approximately similar weight fell between 250,000 and 300,000 lb., while the average of all the locomotives ordered was between 235,000 and 240,000 lb. The annual compilation of the *Railway Age Gazette*, printed a few weeks ago, shows that in 1911 there were ordered 2850 locomotives, and this number, at the average weight mentioned, would involve a total weight of locomotives ordered, exclusive of tenders, of about 340,000 net tons. Adding an estimate for the weight of tenders, we should have approximately 400,000 net tons as the total weight of engines and tenders ordered in 1911, which was really an off year for locomotive orders, since, according to the figures of the journal quoted, the number ordered in 1911 was the smallest for a decade, barring only the year 1904 and 1908.

Of course, it must be recognized that the increase in weight of locomotive has tended to take care of the increase in freight traffic, so that the number of locomotives in service does not increase nearly as rapidly as the total freight ton-mileage. At the same time the total weight of locomotives built from year to year is increasing, and it is not unfair to make a general estimate that the normal average weight of engines and tenders built is about half a million net tons per year. Thus locomotive construction involves no inconsiderable portion of the total rolled-steel consumption of the country, the bulk of the weight being made up of rolled steel.

## The Proposed Tariff Changes

### Opinions of Iron and Steel Manufacturers as to Their Effect

On the publication of the substance of the changes in the metal schedule of the existing tariff act, proposed by the Underwood bill, *The Iron Age* telegraphed a number of iron and steel companies asking their views as to the probable effect of such reductions upon the industry. The replies thus far received are given below:

#### Tariff Board Should Report First

CHICAGO, Ill., January 23, 1912.

Under normal price conditions here and abroad the proposed reductions of iron and steel duties are excessive and would create a hardship on all employees in the iron and steel industries through the necessary large reductions in wages. Buyers in seaports and points near to them could import at prices less than cost of delivering there by home manufacturers. The Tariff Board should study and report on this matter before changes are made.

INLAND STEEL COMPANY.

#### Passage of the Bill Unlikely

YOUNGSTOWN, Ohio, January 23, 1912.

I do not think the likelihood of tariff reduction will have very much effect on general business. I believe it is quite well understood that whatever is done with reference to the writing of a new tariff will be done for political effect. When the Payne-Aldrich bill was formulated the iron and steel interests stood their full share of the reduction, and are ready to do their full share now if it seems necessary. I do not believe the Senate will pass

the proposed bill and feel quite certain the President will not sign any hastily considered measure such as is proposed, but will wait for a thorough investigation.

J. G. BUTLER, JR.

#### Unnecessary and Indefensible

PITTSBURGH, Pa., January 23, 1912.

The proposed new tariff bill, as we understand it, will open American markets to foreign competition and at same time reduce the Government revenue and the wages of our workmen. The duties in the metal schedule were reduced about 50 per cent. in the Payne tariff, and any further reduction is unnecessary and indefensible.

JONES & LAUGHLIN STEEL COMPANY.

#### Far-Reaching and Disastrous

COATESVILLE, Pa., January 23, 1912.

In my opinion the effect of the reductions in duties on iron and steel proposed would be far-reaching and disastrous. The efforts for generations to build up industries, in many cases would be dealt an irreparable blow. Already steel under the present tariff is being imported largely on the Pacific coast. Under the proposed one foreign products would invade the East.

A. F. HUSTON,

President Lukens Iron & Steel Company.

#### Effects Worse in Dull Times

BUFFALO, N. Y., January 23, 1912.

Lowering the tariff on pig iron, scrap and steel products will work to injure American mills and their employees when they can least afford to stand it, namely, when business is dull. At such times foreign material would be forced on our market, supplanting an equivalent amount of domestic manufacture.

ROGERS-BROWN IRON COMPANY.

#### The Allis-Chalmers Reorganization

The statement is made that in the tentative plans now being considered for the reorganization of the Allis-Chalmers Company, \$6,000,000 has been fixed as the probable amount of new capital to be raised. This new capital will be represented by an issue of 5 per cent. bonds if present plans are followed, and the existing issue of 5 per cent. bonds, of which \$11,148,000 is in the hands of the public, will, it is expected, be converted into some other class of security, which will not constitute a fixed charge on the company. This may take the form of income bonds, debenture or preferred stock, so as to avoid a burden of funded debt, on which interest must be paid in good times and bad, under pain of foreclosure.

The company has a surplus at present of \$7,130,000 in current assets over current liabilities, but \$5,000,000 of these assets is represented by inventories at the plants and \$3,900,000 by receivables. There was \$900,000 cash on hand December 31. Of the current liabilities the largest item is \$1,420,000 notes payable, these notes including \$160,000 owing to Judge E. H. Gary. Other liabilities foot up to \$1,250,000.

No statement has been made as to the relative consideration to be shown the preferred stock and the bonds in the matter of rights to subscribe to the new bond issue, through which it is expected the needed new capital will be obtained.

#### Watson-Stillman Company to Enlarge

Announcement is made of the reorganization of the Watson-Stillman Company, manufacturer of hydraulic machinery, with a plant at Aldene, N. J., and general offices at 50 Church street, New York. It is stated that the increasing use of hydraulic presses and the steady growth of the business necessitate an extension of the company's manufacturing facilities. To take care of this increased scope it was considered advisable to reorganize the board of directors. The new officers elected are: Francis H. Stillman, president (re-elected); E. A. Stillman, vice-president; J. P. Bird, treasurer; A. F. Stillman, secretary and works manager; Carl Wigtel, chief engineer.



## Personal

Charles F. Colbert, Jr., has resigned his position with the Washington Coal & Coke Company to become coal and coke sales agent for the new Alicia coking plant of W. Harry Brown, 7 Wood street, Pittsburgh. The general office and sales department will be located at South Brownsville, Pa., where one of the most modern plants in the Connellsville region has been established in connection with a large tract of excellent coking coal.

F. L. Morse, treasurer and general manager Morse Chain Company, Ithaca, N. Y., has undergone an operation for appendicitis. The operation was successful and he is rapidly recovering.

John N. Allen, 738 Oliver Building, Pittsburgh, Pa., has been appointed sales agent in Pittsburgh territory for the Monarch Engineering & Manufacturing Company, Baltimore, Md., manufacturer of the Steele-Harvey crucible melting furnaces, Monarch core ovens, etc.

C. A. Delaney, who for a number of years was superintendent of the Dickson Works of the American Locomotive Company at Scranton, Pa., and later sales representative at that place, has been appointed Western Representative with headquarters in the McCormick Building, Chicago.

G. A. Hagar, formerly of the general sales department of the Lackawanna Steel Company, Buffalo, N. Y., has been appointed district sales agent in charge of Buffalo territory with offices at 206 Fidelity Building in that city.

W. T. S. Johnson, of the Bradford Machine Tool Company, Cincinnati, sailed for Europe from New York January 24.

C. L. Starrett, who has been acting purchasing agent for the Republic Iron & Steel Company for several months, has been appointed purchasing agent, with headquarters at Youngstown, Ohio.

James H. Grose, Jr., for some years superintendent of the Howard axle works and the Schoen steel wheel works of the Carnegie Steel Company at Pittsburgh, has been appointed superintendent of the Ohio steel works and blast furnaces of the same company at Youngstown, Ohio, succeeding Joseph A. McDonald, resigned.

Charles E. Pope, formerly president of the Pope Tin Plate Company, Pittsburgh, has sailed for Egypt.

Joseph A. McDonald, superintendent of the Carnegie Steel Company's Ohio steel works and blast furnaces at Youngstown, Ohio, has resigned. He is a brother of Thomas McDonald, general manager of the Youngstown works of the Carnegie Company, and has not made any plans for the immediate future. He had been connected with the company since 1903.

R. J. Young, director of the safety department of the Illinois Steel Company, Chicago, will lecture in the Opera House in Youngstown, Ohio, February 2, on "Safety Appliances and Industrial Accident Prevention." He goes to Youngstown largely through the efforts of Joseph G. Butler, Jr., who is president of the Chamber of Commerce of that city.

Charles R. Crane has been elected head of the Crane Company, Chicago, to succeed his father, the late Richard T. Crane. R. T. Crane, Jr., is the new first vice-president, and R. T. Crane 3d was made second vice-president.

R. H. Wolff, 445 Broadway, New York, has returned from Europe, after an absence of seven months, during which he visited numerous works in the various steel manufacturing centers.

F. V. McMullin, formerly with the United Engineering & Foundry Company in its forging press department, has become treasurer of the Pennsylvania Forge Company, Bridesburg, Philadelphia, Pa.

W. O. Jacquette has resigned the position of vice-president of Manning, Maxwell & Moore, Inc., New York City.

L. R. Pomeroy has established an office as consulting engineer, specializing in railroad shop work, at 50 Church street, New York. Until recently he was connected with the engineering firm of J. G. White & Co., Inc., but was previously associated with the Safety Car Heating & Lighting Company, American Locomotive Company and General Electric Company.

D. G. Kimball, formerly with the Chicago sales office of Hill, Clarke & Co., has been appointed sales manager of the Wallcott & Wood Machine Tool Company, Jackson, Mich.

H. W. Osborne, formerly secretary of the Imperial Belting Company, Chicago, has resigned his position and disposed of his interest in that company. He is now connected in the capacity of city salesman with the Chicago office of the Graton & Knight Company.

E. R. James, secretary and treasurer of the Empire Rolling Mill Company, Cleveland, Ohio, has been elected a director of the Upson Nut Company.

Clarence F. Parker, formerly purchasing agent of the Illinois Central Railroad at Chicago, has been elected a vice-president, and will be succeeded as purchasing agent by John C. Kuhns.

H. C. Potter, Jr., has been elected president and Francis C. Adler secretary and treasurer of the C. C. Knight Company, iron and steel merchant, Philadelphia, Pa. Charles McDermott, who has been connected with the company for 12 years, recently as outside salesman, has been appointed acting manager.

## Pittsburgh and Vicinity Business Notes

The annual banquet of the Engineers' Society of Western Pennsylvania will be held in the Fort Pitt Hotel, Pittsburgh, February 27. The speakers will be Dr. Earl Barnes, the well-known University Extension Society lecturer; Prof. Charles F. Scott, professor of electrical engineering in Yale University; James H. Harlow, mining engineer of Pittsburgh, and Dr. W. O. Snelling, chemist for the United States Bureau of Mines. Officers of the society have recently been elected as follows: James O. Handy, consulting chemist of the Pittsburgh Testing Laboratory, president; Samuel A. Taylor, mining engineer, vice-president; A. E. Frost, treasurer, who has held this position for 32 years. Alexander L. Hoerr and William C. Hawley were elected directors for three years. Elmer K. Hiles is secretary.

It is announced that the Aluminum Company of America will build a new smelting plant at New Kensington, Pa., to cost about \$100,000, work on which is expected to commence in a short time.

The Blaw Collapsible Steel Centering Company, Pittsburgh, has leased ground at Yonkers, N. Y., to be used for storage purposes only. The company will not erect a plant at that place as reported.

The Vitro Mfg. Company, not Withrow Mfg. Company, as recently printed, is the successor to Vollkommer & Co., whose general offices are in the Empire Building, Pittsburgh. The company has placed a contract for a steel and concrete storage building, 25 x 75 ft. This building is located near the tracks of the Pennsylvania Railroad adjoining the factory and will enable carload shipments to be made.

The stockholders of the Youngstown Bronze & Iron Foundry Company, Youngstown, Ohio, met last week and elected the following officers: Grant Jones, president; John W. Wright, vice-president; J. Watson Taylor, manager; F. C. Noll, secretary and treasurer. The company had a very successful year. It completed an addition, 100 x 136 ft., to its foundry in December.

The Manufacturers' Publicity Association of Pittsburgh held its annual dinner in that city January 19. The officers of the association are: J. C. McQuiston, of the Westinghouse interests, president; Stephen C. Mason, McConway & Torkey Company, vice-president; C. W. Brooke, Machnesey Building, secretary; W. A. Keirn, Mesta Machine Company, treasurer.

At a meeting of stockholders of the Peerless Heater Company in Pittsburgh January 20, the capital stock was increased to \$120,000. It manufactures Peerless steam and hot water boilers.

Frank C. Roberts & Co., Philadelphia, have been retained as the engineers for the new blast furnace to be built by the Northern Iron Company at Port Henry, N. Y.

# The Iron and Metal Markets

## New Buying Falling Off

### Shipyard Demand More Active, but a Lull in Railroad Lines

#### Wire Products Advanced \$1 a Ton—Line Pipe for Canada—Steel-Making Pig Iron Weaker

A falling off in new buying is indicated by reports from the leading steel markets. This is not considered traceable to the introduction of the new tariff bill with its 50 per cent. average reduction in iron and steel duties; partly because the reaction from the heavy buying in December was previously in evidence. There is also the belief that the bill will not become a law in its present form and is to be regarded as another of the political influences whose effect has been seen in the iron trade for some months.

Our Pittsburgh report indicates that, in addition to the slackening in new orders, a factor there is that specifications lately have not been up to expectations. February developments will give more light on the real bearing and significance of this condition, however, than is obtainable now. What is important to know is how far speculation by jobbers and others entered into the contracts of the late weeks of 1911, and how far the buyers of bargain steel are able to market their own products into which it enters.

The prolonged negotiations over the Pennsylvania Railroad's order for rails is due largely to the old question of discard from the top of the ingot, which reduces itself again to an issue of price. The note sounded by the Steel Corporation's president at Washington on the danger in the present high carbon demands of the railroads has directed attention sharply to a very important phase of the rail situation. Actual rail orders are light. In the past week the Erie's contract for 30,000 tons has come out and the Lackawanna has informally placed 20,000 tons, of which 15,000 tons goes to Buffalo. Of the Erie order, 17,000 tons goes to the Steel Corporation, while about 8000 tons is given to the Lackawanna Steel Company and about 5000 tons to Bethlehem.

Vessel work is of interest in the lull in railroad buying. In Eastern markets 60,000 tons of plates and shapes are being figured on for pending vessel contracts, including the two battleships just awarded. On the Lakes, a welcome addition to bookings is a contract with the American Shipbuilding Company for two 600-ft. freighters for the Pittsburgh Steamship Company, for delivery in late summer.

An advance of \$1 a ton in wire products announced by an independent Pittsburgh company, effective January 22, has been followed by other producers. This brings wire nails to \$1.60 and fence wire to \$1.40. The chief effect will be to expedite specifications, as large contracts exist at \$1.50 for wire nails and a smaller amount at \$1.55.

On plates and plain structural material, which are taken as the gauge of the market for heavier products, prices show some variations. In Central Western markets plates are weaker than shapes, though ordinary business in both is done at 1.15c., Pittsburgh. Prices on bars are maintained, and, as the mills are well sold to the middle of the year, no serious test of the market is likely for some time.

January promises to yield a good total of orders to the fabricating shops, though the volume of work in sight has shown some falling off. The Dime Savings Bank at Detroit, 5500 tons, has been taken by the American Bridge Company.

The increased operation of pipe and tube works is a feature in the recent enlarged schedules of the Steel Corporation. A contract has been taken by the National Tube Company for 20 miles of 18-in. pipe for Moose Jaw, in Saskatchewan, and the Mark Mfg. Company will furnish 7½ miles of 12-in. pipe for the Philadelphia Company.

In the pig iron market evidence is accumulating that the buying of November and early December provided many consumers with all the iron they will want in the first half of the year, and it is evident that with the increase in merchant furnace output the supply of iron in the next few months will be ample. Some signs of weakness appear in the market for steel-making iron, particularly on Bessemer and basic in the Pittsburgh district.

Eastern cast-iron pipe makers are inquiring for about 20,000 tons of iron. In the Central West the principal inquiry is for 8000 tons, half Northern and half Southern iron, for a company having plants in Indiana and Michigan. An inquiry by a large foundry interest at Pittsburgh for third and fourth quarter iron is conspicuous, as few buyers are venturing on that ground.

## A Comparison of Prices

### Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Jan. 24, 1912.	Jan. 17, 1912.	Dec. 27, 1911.	Jan. 25, 1911.
<b>Pig Iron, Per Gross Ton:</b>				
Foundry No. 2 standard, Philadelphia	\$14.85	\$14.85	\$14.85	\$15.50
Foundry No. 2, Valley furnace	13.00	13.00	13.00	13.75
Foundry No. 2 Southern, Cincinnati	13.25	13.25	13.25	14.25
Foundry No. 2, Birmingham, Ala.	10.00	10.00	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.00	14.00	14.00	15.50
Basic, delivered, eastern Pa.	14.25	14.25	14.25	14.25
Basic, Valley furnace	12.25	12.50	12.25	13.25
Bessemer, Pittsburgh	14.90	15.15	15.15	15.90
Gray forge, Pittsburgh	13.40	13.40	13.40	14.15
Lake Superior charcoal, Chicago	16.00	16.00	16.00	17.50
<b>Billets, etc., Per Gross Ton:</b>				
Bessemer billets, Pittsburgh	20.00	20.00	20.00	23.00
Open hearth billets, Pittsburgh	20.00	20.00	20.00	23.00
Forging billets, Pittsburgh	28.00	28.00	26.00	28.00
Open hearth billets, Philadelphia	22.40	22.40	22.40	25.40
Wire rods, Pittsburgh	24.50	24.50	24.50	28.00
<b>Old Material, Per Gross Ton:</b>				
Iron rails, Chicago	15.00	15.00	14.75	14.50
Iron rails, Philadelphia	16.50	16.50	16.00	17.00
Car wheels, Chicago	13.25	13.25	13.25	13.00
Car wheels, Philadelphia	12.00	12.50	12.50	13.00
Heavy steel scrap, Pittsburgh	12.75	13.00	12.50	13.50
Heavy steel scrap, Chicago	10.50	10.50	10.50	11.50
Heavy steel scrap, Philadelphia	12.00	12.25	12.25	12.50

### Finished Iron and Steel,

Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.27½	1.27½	1.25½	1.32½
Iron bars, Pittsburgh	1.25	1.25	1.25	1.35
Iron bars, Chicago	1.15	1.15	1.15	1.30
Steel bars, Pittsburgh	1.15	1.15	1.15	1.40
Steel bars, tidewater, New York	1.31	1.31	1.31	1.56
Tank plates, Pittsburgh	1.15	1.15	1.15	1.40
Tank plates, tidewater, New York	1.31	1.31	1.31	1.56
Beams, Pittsburgh	1.15	1.15	1.15	1.40
Beams, tidewater, New York	1.31	1.31	1.31	1.56
Angles, Pittsburgh	1.15	1.15	1.15	1.40
Angles, tidewater, New York	1.31	1.31	1.31	1.56
Skelp, grooved steel, Pittsburgh	1.12½	1.15	1.15	1.25
Skelp, sheared steel, Pittsburgh	1.20	1.20	1.20	1.30

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.



Sheets, Nails and Wire,	Jan. 24, 1912.	Jan. 17, 1912.	Dec. 27, 1911.	Jan. 25, 1911.
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.90	1.90	1.90	2.20
Wire nails, Pittsburgh.....	1.60	1.55	1.55	1.75
Cut nails, Pittsburgh.....	1.55	1.50	1.50	1.60
Fence Wire, ann'led, 0 to 9, P'gh.	1.40	1.35	1.35	1.55
Barb wire, galv., Pittsburgh....	1.00	1.85	1.85	2.05

**Coke, Connellsville,**

Per Net Ton, at Oven:				
Furnace coke, prompt shipment	1.75	1.85	1.75	1.40
Furnace coke, future delivery..	1.70	1.70	1.65	1.70
Foundry coke, prompt shipment	2.00	2.00	1.90	1.90
Foundry coke, future delivery..	2.10	2.15	2.15	2.25

Metals, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.....	14.50	14.62½	14.25	12.75
Electrolytic copper, New York...	14.25	14.37½	14.12½	12.31½
Spelter, St. Louis.....	6.40	6.50	6.20	5.40
Spelter, New York.....	6.55	6.65	6.35	5.55
Lead, St. Louis.....	4.37½	4.35	4.35	4.35
Lead, New York.....	4.45	4.45	4.45	4.50
Tin, New York.....	42.87½	42.50	45.25	43.25
Antimony, Hallett, New York..	7.55	7.65	7.60	7.25
Tin plate, 100 lb. box, New York	\$3.64	\$3.64	\$3.64	\$3.64

**Prices of Finished Iron and Steel f.o.b. Pittsburgh**

Freight rates from Pittsburgh in carloads, per 100 lb., New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ½ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thinnest edge	.10
Gauges under 3-16 in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.....	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.....	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.  
**Structural Material.**—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.15c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.....	1.20 to 1.25
H-beams over 18 in.....	1.30 to 1.35
Angles over 6 in.....	1.20 to 1.25
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909.....	1.20 to 1.25
Tees, 3 in. and up.....	1.20 to 1.25
Zees, 3 in. and up.....	1.15 to 1.20
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909.....	1.20 to 1.25
Deck beams and bulb angles.....	1.45 to 1.50
Hand rail tees.....	2.00 to 2.15
Checkered and corrugated plates.....	2.00 to 2.15

**Sheets.**—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows:

Blue Annealed Sheets.	Cents per lb.
Nos. 3 to 8.....	1.30 to 1.35
Nos. 9 and 10.....	1.40 to 1.45
Nos. 11 and 12.....	1.45 to 1.50
Nos. 13 and 14.....	1.50 to 1.55
Nos. 15 and 16.....	1.60 to 1.65

**Box Annealed Sheets, Cold Rolled.**

	One Pass.	Three Pass.
Nos. 10 to 12.....	1.55 to 1.60	.....
Nos. 13 and 14.....	1.60 to 1.65	.....
Nos. 15 and 16.....	1.65 to 1.70	1.75 to 1.80
Nos. 17 to 21.....	1.70 to 1.75	1.80 to 1.85
Nos. 22, 23 and 24.....	1.75 to 1.80	1.85 to 1.90
Nos. 25 and 26.....	1.80 to 1.85	1.90 to 1.95
No. 27.....	1.85 to 1.90	1.95 to 2.00
No. 28.....	1.90 to 1.95	2.00 to 2.05
No. 29.....	1.95 to 2.00	2.05 to 2.10
No. 30.....	2.05 to 2.10	2.15 to 2.20

**Galvanized Sheets of Black Sheet Gauge.**

Nos. 10 and 11.....	1.90 to 1.95
Nos. 12, 13 and 14.....	2.00 to 2.05
Nos. 15, 16 and 17.....	2.15 to 2.20
Nos. 18 to 22.....	2.30 to 2.35
Nos. 23 and 24.....	2.40 to 2.45
Nos. 25 and 26.....	2.60 to 2.65
Nos. 27.....	2.75 to 2.80
No. 28.....	2.90 to 2.95
No. 29.....	3.00 to 3.05
No. 30.....	3.20 to 3.25

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations:

**Corrugated Roofing Sheets Per Square.**

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29.....	.....	\$2.30	23.....	\$2.35	\$3.45
28.....	\$1.30	2.45	22.....	2.55	3.65
27.....	1.45	2.50	21.....	2.75	4.00
26.....	1.55	2.60	20.....	3.00	4.30
25.....	1.80	3.00	18.....	4.00	5.65
24.....	2.05	3.10	16.....	4.85	6.45

**Wire Rods and Wire.**—Bessemer, open hearth and chain rods, \$24.50. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, \$1.40; galvanized, \$1.70. Carload lots, to retailers, annealed, \$1.50; galvanized, \$1.80. Galvanized barb wire to jobbers, \$1.90; painted, \$1.60. Wire nails, to jobbers, \$1.60.

The following table gives the prices to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

**Fence Wire, Per 100 Lb.**

Nos.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	\$1.55	\$1.60	\$1.65	\$1.70	\$1.80	\$1.90	\$2.00	\$2.10
Galvanized	1.85	1.90	1.95	2.00	2.10	2.20	2.60	2.70

**Wrought Pipe.**—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from December 1, 1911:

**Butt Weld.**

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
$\frac{3}{4}$ and $\frac{1}{2}$ .....	74	54	68	48
$\frac{3}{4}$ in.....	75	65	69	59
$\frac{1}{2}$ in.....	78	68	72	62
$\frac{3}{4}$ to $1\frac{1}{2}$ in.....	81	73	75	67
2 to 3 in.....	82	75	76	69

**Lap Weld.**

1½ and 1½ in.....	79	72	68	61
2 in.....	81	74	72	65
2½ to 4 in.....	80	72	73	65
4½ to 6 in.....	78	68	71	61
7 to 12 in.....	55	..	47	..

**Butt Weld, extra strong, plain ends, card weight.**

¾, ¾, ¾ in.....	70	60	65	55
¾ in.....	75	69	70	64
¾ to 1½ in.....	79	73	74	68
2 to 3 in.....	80	74	75	69

**Lap Weld, extra strong, plain ends, card weight.**

1½ in.....	76	70	66	60
2 in.....	78	72	73	65
2½ to 4 in.....	77	71	72	66
4½ to 6 in.....	70	60	65	55
7 to 12 in.....	65	55	60	50

**Butt Weld, double extra strong, plain ends, card weight.**

¾ in.....	65	59	60	54
¾ to 1½ in.....	68	62	63	57
2 to 3 in.....	70	64	65	59

**Lap Weld, double extra strong, plain ends, card weight.**

2 in.....	66	60	61	55
2½ to 4 in.....	68	62	63	57
4½ to 6 in.....	67	61	62	56
7 to 8 in.....	60	55	55	45

**Plugged and Reamed.**

1 to 1½, 2 to 3 in. Butt Weld	Will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld as specified.
2, 2½ to 4 in. Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

**Boiler Tubes.**—Discounts on lap welded steel and standard charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		Standard Charcoal Iron.	
1½ to 2¼ in.....	.65	1½ in.....	.48
2½ in.....	.67½	1¾ to 2¼ in.....	.50
2¾ to 3½ in.....	.72½	2½ in.....	.55
3½ to 4 in.....	.75	2¾ to 5 in.....	.60
5 to 6 in.....	.67½	Locomotive and steamship	
7 to 13 in.....	.65	special grades bring higher prices.	

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f. o. b. mill at Pittsburgh basing discounts, lowered by two points.

## Pittsburgh

PITTSBURGH, PA., January 24, 1912.

The Carnegie Steel Company started its blast furnaces at Sharon, Pa., on Tuesday, and in a few days the open hearth steel plant, which has six 40-ton furnaces, a 30-in. blooming mill and a finishing mill for rolling billets, sheet bars and angles, will be in operation. This plant has been idle for about two years. About January 25 the company will start its two furnaces at Columbus, Ohio, and a few days after the Bessemer steel plant; blooming and sheet bar mills. When the two Columbus furnaces go in the company will have in operation 49 of its 59 furnaces. The 10 idle furnaces consist of two Isabella, one Edith, Neville, Zanesville, No. 1 Mingo, one Niles, one Steubenville and two Edgar-Thomson. The Jones & Laughlin Steel Company has two of its four Talbot open hearth furnaces at Aliquippa running and expects to start a third within a week or 10 days. The lull in the steel trade, which started about the last week in December, still continues and has caused some uneasiness. New buying is extremely quiet, but this is largely from the fact that consumers covered into second quarter at the low prices ruling some time ago. The fact that these prices were very attractive to consumers should lead to liberal specifications. However, specifications so far this month have been only fair, not having been as heavy as anticipated. The only change in prices was the advance of \$1 a ton in wire products, effective January 22, but consumers are covered for 60 to 90 days at the lower prices, the advance being expected to have the effect of stimulating specifications against contracts. The supply of furnace coke for prompt shipment is gradually getting more plentiful. The scrap market has quieted down and prices are weaker. While the general situation is regarded as fairly satisfactory, at the same time there is some apprehension over the present lull, and the real test of the market, according to the ideas of the large steel interests, will come between now and the middle of February.

**Pig Iron.**—While not officially confirmed, reports are that the Pittsburgh Steel Company has bought 10,000 to 12,000 tons of basic iron for February delivery from a local interest at somewhat under \$12.25, at furnace, in the Wheeling district. The Pittsburgh Steel Company has started active work on the building of two blast furnaces at Monessen, Pa., but these will not be making iron before early in 1913, so that the company will be a large buyer of basic iron in the open market all this year to the extent of 12,000 tons per month, or more, if its wire mills run full. On January 19 the Westinghouse Electric & Mfg. Company sent out inquiries for foundry iron for third and fourth quarter delivery for its foundries at Pittsburgh and Cleveland, Ohio. It may buy 12,000 tons or more if the right prices are made. The pig iron market has failed to hold the higher prices quoted recently. Bessemer iron has recently sold in fair sized lots below \$14, at Valley furnace, and basic at \$12.25 or lower. It is figured out by consumers that the reduction in ore this year may represent \$1 per ton of pig iron. We note several sales of standard Bessemer iron at somewhat less than \$14, at Valley furnace, and of basic at \$12.25 or lower, at furnace. Foundry and forge iron are quiet. We have reduced prices on Bessemer and basic and now quote: Bessemer, \$14; basic, \$12.25; malleable Bessemer, \$12.75 to \$13; No. 2 foundry, \$13; gray forge, \$12.50; all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

**Steel Billets and Sheet Bars.**—Most consumers of sheet bars are covered through the first quarter and in some cases through the first half, but there are still some consumers of billets that must cover their requirements and for the present are buying from month to month. It is stated that open hearth billets and

sheet bars are being offered by several of the small mills at less than \$20 for billets and \$21 for bars. We quote: Bessemer and open hearth billets, 4 x 4 in., up to 0.25 carbon, \$20; Bessemer and open hearth sheet bars, \$21, and forging billets, \$28, Pittsburgh or Youngstown.

**Ferromanganese.**—The local market is very quiet. The price of \$41, Baltimore, for standard 80 per cent. English is still being held, but some resales are being made by dealers at slightly lower prices. The freight rate to Pittsburgh is \$1.95 a ton.

**Ferrosilicon.**—A leading local consumer has closed with a domestic maker for its entire requirement of 50 per cent. for this year, about 6000 tons, on private terms. We note sales of two cars, or about 60 tons, for February delivery at the reported price of \$70, Pittsburgh. We quote small lots of 50 per cent. at \$70; 100 to 500-ton lots at \$69, and over 500 tons at \$68, Pittsburgh. The lower grades have gone off in price, and we quote 10 per cent. at \$20; 11 per cent., \$21, and 12 per cent., \$22, f.o.b. cars at furnace, Jackson, Ohio, or Ashland, Ky.

**Muck Bar.**—With no new inquiry prices are slightly weaker. We quote best grades of muck bar, made from all pig iron, at \$28, Pittsburgh.

**Wire Rods.**—Most consumers are covered by contracts made some time ago when prices were lower, but specifications are not coming in satisfactorily. We quote Bessemer, open hearth and chain rods at \$24.50, f.o.b. Pittsburgh.

**Skelp.**—Some of the mills are going rather aggressively after new orders and prices are slightly weaker. We quote grooved steel skelp at 1.12½c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.42c. to 1.45c., and sheared iron skelp, 1.62½c. to 1.65c., all for delivery at buyer's mills in the Pittsburgh district.

**Steel Rails.**—As yet the order of the Pennsylvania Railroad has not been distributed to the mills, the company insisting on certain specifications which the mills have not yet agreed to. The coal trade is quite active now, especially among West Virginia operators, and this is reflected in a fairly large demand for light rails, the Carnegie Steel Company having received new orders and specifications last week for about 2800 tons. There is a fair run of new orders for splice bars, with a good deal of tonnage pending. We quote splice bars at 1.50c. per lb., and repeat quotations on rails: Standard sections, 1.25c. per lb.; 8 and 10-lb. light rails, 1.25c.; 12 and 14-lb., 1.16c.; 16, 20 and 25-lb., 1.12c.; 30 and 35-lb., 1.10c., and 40 and 45-lb., 1.08c., f.o.b. at mill.

**Structural Material.**—New inquiries are fairly active, but the structural trade has quieted down this month as compared with early December. The American Bridge Company has taken about 4500 tons of steel for the new building of the Dime Savings Bank at Detroit, Mich., the Ft. Pitt Bridge Works about 700 tons for additions to the Carnegie Technical Schools in this city, and the McClintic-Marshall Construction Company about 300 tons for a new warehouse for the Owens Glass Company at Fairmont, W. Va. Two local mills are reported as holding plain material at 1.15c., but there is evidence that on desirable orders 1.10c. is being named in some cases. We quote beams and channels, up to 15 in., at 1.15c., f.o.b. Pittsburgh, while for very small orders 1.20c. is being charged.

**Plates.**—New orders for steel cars are scarce, and few inquiries are out. The Chicago & Northwestern has placed 550 steel hopper cars with the Western Car & Foundry Company, and the Grand Trunk is asking prices on 500 refrigerator cars and 500 automobile cars, both of a higher type of construction than ordinarily built. Most of the plate mills are quoting ¼-in. and heavier plates at 1.15c., but in some cases 1.10c. is still being named.

**Sheets.**—Specifications against contracts are being received by the mills at a liberal rate, and shipments this month will be fully as heavy as in December, which was a banner month. New buying is rather quiet, but this is for the reason that most consumers covered some time ago and are out of the market. It is stated that prices on sheets, as given on a previous page, are being fairly well maintained.

**Tin Plate.**—Little new buying is being done, consumers having covered their requirements the latter part of last year. Specifications against these contracts are coming in freely, and shipments by the mills this month will be fully as heavy as in December. It is stated that the tin plate mills are now operating to between 80 and 85 per cent. of capacity. On the few small orders now being placed \$3.40 per base box for 14 x 20 coke plates is reported as being generally obtained.



**Bars.**—New demand for both iron and steel bars is dull, but this is because consumers covered their requirements ahead for some time when prices were lower. They are now specifying in a fairly satisfactory way against their contracts. The leading steel bar mills are pretty well filled with work through first quarter. We quote steel bars at 1.15c. to 1.20c., for delivery in first quarter, and iron bars at 1.25c. to 1.30c., f.o.b. maker's mill, Pittsburgh.

**Hoops and Bands.**—Specifications are fairly satisfactory against contracts, but new demand is dull. We quote steel bands at 1.15c., extras as per the steel bar card, and hoops at 1.25c., for delivery in first quarter, f.o.b. Pittsburgh.

**Rivets.**—Makers of rivets report that a fair amount of new business is being placed, while specifications against contracts are coming in more actively than for some time. We quote structural rivets at 1.50c. and boiler rivets at 1.55c., f.o.b. Pittsburgh, but on very desirable orders some makers might shade these prices 5c. per 100 lb.

**Shafting.**—An increase in specifications from the automobile builders is reported, and the implement makers are also specifying quite freely against contracts. New buying is dull, as most consumers covered some time ago. We quote cold rolled steel shafting in carload and larger lots at 65 per cent. off and in small lots at 60 and 5 per cent. off, delivered in base territory. On very desirable contracts these prices are slightly shaded.

**Spelter.**—The market has been dull and prices have shown a decline. We quote prime grades of Western at 6.30c., East St. Louis, equal to 6.42½c., Pittsburgh.

**Wire Products.**—On Saturday, January 20, the Pittsburgh Steel Company sent out notices to the trade of an advance of \$1 a ton on wire products, effective January 22, and the other makers of wire products have since taken the same action. The fact that the notice of an advance came first from the Pittsburgh Steel Company rather than from the American Steel & Wire Company, which has been customary heretofore, is causing some comment in the trade. One or two makers of wire products were not in sympathy with the advance, but have stated they will go along and observe the higher prices. Consumers of wire and wire nails are covered by contracts made at lower figures, and the advance is expected to stimulate specifications against these contracts. We now quote wire nails, \$1.60; cut nails, \$1.55; galvanized barb wire, \$1.90; painted, \$1.60; annealed fence wire, \$1.40, and galvanized fence wire, \$1.70, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

**Iron and Steel Scrap.**—The demand from consumers has fallen off considerably, and with increased offerings from the dealers prices are softer and on heavy steel scrap are slightly lower. We note sales of 500 tons of heavy steel scrap at \$12.50 and about 200 tons at \$12.60, delivered Youngstown, Ohio. Sales of 500 tons of borings are reported at about \$9.85, delivered at Brackenridge, Pa. Dealers quote as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen and Pittsburgh delivery .....	\$12.75 to \$13.00
No. 1 foundry cast .....	12.50 to 12.75
No. 2 foundry cast .....	10.25 to 10.50
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district .....	10.75 to 11.00
Re-rolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa. ....	12.50 to 12.75
No. 1 railroad malleable stock .....	11.25 to 11.50
Grate bars .....	9.00 to 9.25
Low phosphorus melting stock .....	15.25 to 15.50
Iron car axles .....	20.50 to 21.00
Steel car axles .....	16.00 to 16.25
Locomotive axles .....	22.00 to 22.50
No. 1 busheling scrap .....	11.00 to 11.25
No. 2 busheling scrap .....	7.00 to 7.25
Old car wheels .....	12.00 to 12.25
*Cast iron borings .....	9.85 to 10.00
*Machine shop turnings .....	10.00 to 10.25
†Sheet bar crop ends .....	13.75 to 14.00
Old iron rails .....	14.50 to 14.75
No. 1 wrought scrap .....	12.00 to 12.25
Heavy steel axle turnings .....	9.75 to 10.00
Stove plate .....	9.00 to 9.25

\*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping pound.

**Merchant Pipe.**—The very cold weather of the past two or three weeks has restricted the new demand for merchant pipe to some extent, but the amount of new business being placed with the mills at present is about as large as usual at this season. A gas interest at Moose Jaw, Canada, has bought about 20 miles of 18-in. steel pipe, which will be rolled by the National Tube

Company. The Philadelphia Iron Company has bought 7½ miles of 12-in. of the Mark Mfg. Company, Zanesville, Ohio.

**Tubes.**—New business in locomotive tubes is fairly active, but the demand for merchant tubes is quiet and prices continue to be more or less shaded.

**Coke.**—The flurry in prompt furnace coke, which sold about a week ago at \$1.85 to \$1.90 per net ton at oven, is pretty well over, the supply being larger and prices slightly lower. Prompt furnace coke has been offered in the past day or two at \$1.85 and declined. Consumers of furnace coke are pretty well covered by contract and no large inquiries are in the market. The demand for foundry coke is fairly active, but there is not much new inquiry on contracts. The output of coke was about 15,000 tons heavier the past week than in the previous week. We quote standard grades of furnace coke at \$1.75 to \$1.80 and 72-hr. foundry for spot shipment at \$2 to \$2.10 per net ton at oven.

## Chicago

CHICAGO, ILL., January 24, 1912. (By Teleg. aph.)

At present the market is being carried along by the specifications following upon the wave of contract buying which reached its high at the end of the year. While these specifications are liberal, especially as regards bars, structural shapes and plates, and the local mills are abundantly supplied with orders for the immediate future, new buying is dragging somewhat. The trade appears to be buying to fill its routine needs, but is slow to purchase for extensions or new projects. Specifications for rails still lack final settlement and orders are accordingly withheld. Prices of finished steel materials in this market are still largely determined by local competition, but some business is going to Eastern mills at higher quotations where more prompt deliveries are offered. An advance of \$1 a ton in wire products is announced, on which basis contracts are acceptable for 60 days. The pig iron market has not been active, with the exception of the interest aroused by the requirements of a northern Indiana implement manufacturer for a round tonnage of iron for its various plants.

(By Mail.)

**Pig Iron.**—The interest of the sellers of Southern pig iron in this market at this writing is centered largely upon the inquiry of the LaPorte, Ind., implement concern for a round tonnage for its several plants. It is not expected that the apparently firm position of the Southern furnaces on the basis of \$10, Birmingham, for No. 2 will be weakened to any significant extent, if at all, despite the eagerness for the business. Several sales of Northern iron carried over from the preceding week, one lot amounting to 2000 tons, are reported. The situation shows a tendency to drag somewhat and quotations, while reasonably firm, are made for full first half delivery. A wide variation in the prices of charcoal iron is noted, particularly outside of Chicago proper, and quotations as low as \$14 at Michigan furnaces are not exceptional. We continue to quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal .....	\$16.00 to \$16.50
Northern coke foundry, No. 1 .....	14.50 to 15.00
Northern coke foundry, No. 2 .....	14.00 to 14.50
Northern coke foundry, No. 3 .....	13.50 to 14.00
Northern Scotch, No. 1 .....	16.00
Southern coke, No. 1 foundry and No. 1 soft .....	14.85
Southern coke, No. 2 foundry and No. 2 soft .....	14.35 to 14.85
Southern coke, No. 3 .....	14.10 to 14.35
Southern coke, No. 4 .....	13.85 to 14.10
Southern gray forge .....	13.60 to 13.85
Southern mottled .....	13.60 to 13.85
Malleable Bessemer .....	14.35 to 14.50
Standard Bessemer .....	16.75
Basic .....	14.75
Jackson County and Kentucky silvery, 6 per cent. ....	16.40
Jackson County and Kentucky silvery, 8 per cent. ....	17.40
Jackson County and Kentucky silvery, 10 per cent. ....	18.40

**Rails and Track Supplies.**—There is little new in the railroad situation. Scattering orders for small lots of rails are being placed on the books of the mills, but the mills themselves remain idle in this district pending the receipt of specifications on the larger contracts. In contrast, specifications for track fastenings are plentiful. Prices, if anything, show some increase in elasticity. We quote standard railroad spikes at 1.50c., base; track bolts, with square nuts, 1.90c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb.,

1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c., Chicago.

**Structural Material.**—Car builders' specifications continue to fill the mill rolling schedules and these orders for shapes have been augmented in the past month by orders for 500 to 3000 tons of bridge material from almost all of the Western roads. Prices have not been subject to much variation, except, perhaps for architectural purposes, where the wide range of figures being quoted on fabricated steel suggests special prices for the plain shapes involved. The contracts for fabricated steel reported during the week, not including the Dime Savings Bank at Detroit, for which the American Bridge Company will furnish 5467 tons, aggregated 4500 tons and comprised in part the following: Macomber-Whyte Company, buildings, Kenosha, Wis., to Moravia Construction Company, 500 tons; Knights of Columbus Building, San Francisco, to St. Paul Foundry Company, 179 tons; Chicago Great Western Railroad Company, Bancroft street viaduct, Omaha, Neb., to Vierling Steel Company, 263 tons; Sharon Estate, building, San Francisco, Cal., to American Bridge Company, 742 tons; Chicago & Northwestern, bridges, 845 tons; sugar factory at Angola State Farm, Angola, La., to McClintic-Marshall Construction Company, 522 tons; post office at Minneapolis, Minn., to Modern Steel Structural Company, 807 tons. For plain material we quote mill shipment, Chicago delivery, 1.30c. to 1.38c. and from store 1.60c.

**Plates.**—Local mills are well provided with specifications and prices are pretty firmly established at 1.30c., Chicago. Some business is going to Eastern mills, where in certain instances better deliveries are assured. Eastern quotations are generally higher than those of local mills, the Pittsburgh basis of 1.20c. prevailing. On some sizes of plates outside mills are reported as taking business as low as 1.28c., Chicago. We quote without change for Chicago delivery, mill shipment, 1.30c. to 1.35c., and from store, 1.60c.

**Sheets.**—The aggregate tonnage of specifications is moderately large and the regular trade is apparently engaging its customary quota of material. Quotations show practically no tendency toward less varied character. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.03c. to 2.08c.; No. 28 galvanized, 3.03c. to 3.08c.; No. 10 blue annealed, 1.53c. to 1.58c. Prices from store, Chicago, are: No. 10, 1.90c.; No. 12, 1.95c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

**Old Material.**—The scrap market has been very quiet, with melters showing little or no interest in what is offered. Sales made were at prices 25c. to 50c. below the high level at the end of the year. The extent of the recession in prices will depend in a large measure upon the rapidity with which railroad scrap purchased since January 1 is delivered on track. Lists now offered, including one just closing for the Baltimore & Ohio Railroad and carrying about 10,000 tons, are one for 1100 tons from the Northern Pacific and one for 2500 tons from the Burlington. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton.	
Old iron rails.....	\$15.00 to \$15.50
Old steel rails, rerolling.....	12.75 to 13.25
Old steel rails, less than 3 ft.....	11.75 to 12.25
Relaying rails, standard section, subject to inspection.....	24.00
Old car wheels.....	13.25 to 13.75
Heavy melting steel scrap.....	10.50 to 11.00
Frogs, switches and guards, cut apart.....	10.50 to 11.00
Shoveling steel.....	10.25 to 10.75
Steel axle turnings.....	8.50 to 9.00

Per Net Ton.	
Iron angles and splice bars.....	\$12.75 to \$13.25
Iron arch bars and transoms.....	13.75 to 14.25
Steel angle bars.....	10.25 to 10.75
Iron car axles.....	18.00 to 18.50
Steel car axles.....	15.50 to 16.00
No. 1 railroad wrought.....	11.25 to 11.75
No. 2 railroad wrought.....	10.25 to 10.75
Steel knuckles and couplers.....	10.00 to 10.50
Steel springs.....	10.50 to 11.00
Locomotive tires, smooth.....	13.25 to 13.75
Machine shop turnings.....	6.75 to 7.25
Cast and mixed borings.....	6.00 to 6.50
No. 1 busheling.....	9.00 to 9.50
No. 2 busheling.....	6.25 to 6.75
No. 1 boilers, cut to sheets and rings.....	7.00 to 7.50
Boiler punchings.....	12.50 to 13.00
No. 1 cast scrap.....	11.00 to 11.50
Stove plate and light cast scrap.....	9.25 to 9.75
Railroad malleable.....	10.50 to 11.00
Agricultural malleable.....	9.00 to 9.50
Pipes and flues.....	8.00 to 8.50

**Bars.**—Steel bar tonnage is reported well maintained, with practically no change in the situation. Some broadening of the bar iron market is also noted

with an accompanying trend in the direction of a better price situation from the mill standpoint. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.15c. to 1.20c. From store: Soft steel bars, 1.50c. to 1.55c., Chicago.

**Wire Products.**—A general advance of \$1 a ton in all wire products is reported, effective Monday. This follows the well-supported buying on the last advance and despite a temporary setback in the volume of sales of some lines owing to weather conditions. Wire nails were somewhat less in demand during the suspended building operations. The spring demand for fencing is expanding very satisfactorily. We have revised our prices and quote: Plain wire, No. 9 and coarser, base, \$1.58; wire nails, \$1.78; painted barb wire, \$1.78 to \$1.83; galvanized, \$2.08; polished staples, \$1.83; galvanized, \$2.13, all Chicago.

**Cast Iron Pipe.**—The proposed awarding of the contract for 5000 tons of pipe at St. Paul has carried over and will be decided the current week. A number of important lettings are in prospect. We quote as follows, per net ton, Chicago: Water pipe, 4-in., \$26.50; 6 to 12-in., \$24.50; 16-in. and up, \$24, with \$1 extra for gas pipe.

## Philadelphia

PHILADELPHIA, PA., January 23, 1912.

Cast iron pipe makers have come into the market for some round blocks of low grade pig iron. A trifle more inquiry for steel making grades is noted. In finished materials inquiry from shipyards shows the most pronounced gain. Builders are figuring on vessels requiring an aggregate of 60,000 tons of plates and shapes. Orders have been recently placed for 5000 tons of plates and shapes by Delaware River yards. A fair amount of bridge and building work is also pending. Billets have been a trifle more active at unchanged prices. Bars are quiet. After considerable effort to hold prices of old material in the face of a light demand the market weakened and quotations on practically all the leading grades are lower, with little business moving.

**Iron Ore.**—Sales of at least 30,000 tons of Wabana ore have been made to furnaces in this district for delivery the coming season, and this tonnage may be increased to 40,000. Further sales of Cuban ore at 7c. per unit, for delivery over the first half of the year, have also been made, and it is said that the seller has now disposed of the amount available for such delivery. Importations during the week include 18,011 tons of Spanish and 10,500 tons of Cuban ore.

**Pig Iron.**—Cast iron pipe makers, who have practically been out of the market for the past few weeks, are again showing more interest. One Delaware River melter has purchased 2500 tons of high sulphur iron, for early shipment, at close to \$14, delivered, while another interest has an inquiry out for 5000 tons, half No. 3 foundry and half forge, for April-May delivery. A Virginia pipe maker is also inquiring for 10,000 tons for second quarter, covering No. 3 and No. 4 Southern foundry and forge grades. In the higher grades of foundry iron the movement has been light. Few transactions exceeding 200 to 300 tons are noted, business of this character moving at \$14.85 to \$15, delivered, with occasional sales at \$15.25, delivered, for No. 2 X foundry, which basis several producers are firmly maintaining. Several 500-ton orders for Virginia foundry iron have been placed, with numerous small sales, at prices ranging from \$12.25 to \$12.50, furnace. One consumer in the central part of the State is out with an inquiry for 5000 tons of basic for second quarter delivery, while another consumer in the same district has been inquiring for 1500 tons for early shipment. Producers continue to hold at \$14.25, delivered, for eastern Pennsylvania basic. Moderate sales of standard analysis low phosphorus iron are reported. The inquiry recently reported for 3000 to 5000 tons of this grade for second half delivery is still unclosed. Price conditions show practically no change. Sellers are not forcing business, and while the statistical position continues good, buying has not been of a character that would bring about any advance in quotations. For delivery in buyers' yards in this district the following range of quotations, for either early or first half shipment, is named:

Eastern Pennsylvania No. 2 X foundry.....	\$14.85 to \$15.25
Eastern Pennsylvania No. 2 plain.....	14.60 to 15.00
Virginia foundry.....	15.00 to 15.50
Gray forge.....	14.25 to 14.50
Basic.....	14.25 to 14.50
Standard low phosphorus.....	19.00 to 19.50



**Ferroalloys.**—Small sales of 50 per cent. ferromanganese at \$41, Baltimore, are reported, but no large inquiry has developed. Fifty per cent. ferrosilicon is inactive, although an inquiry for 125 tons of 11 per cent. is noted. The former is quoted at \$70, delivered here, while 10 to 12 per cent. furnace grade, with Bessemer specifications as to phosphorus and sulphur, is quoted at \$24.30 to \$26.30, delivered.

**Billets.**—A very fair demand for both forging and rolling billets is reported, although Eastern mills will not take on contracts covering any large amounts for extended delivery at current quotations. Mill activities are on a slightly better basis, and makers are more encouraged with the outlook for the future. Special billets are wanted by Canada, and a moderate over-sea demand for rolling billets is reported. Eastern producers maintain recent quotations, \$22.40 to \$23, delivered here, for basic open hearth rolling billets, and \$26.40 to \$27.40, delivered, for ordinary forging billets.

**Plates.**—While orders are still somewhat irregular about an even volume of miscellaneous business is coming to the mills. In instances a few larger size orders have come out, including one for 1000 tons of boat plates for export to Scotland. Further inquiry for boat plates has developed. One covering a number of boats requiring an aggregate of 60,000 tons of plates and shapes is noted. Orders for some five boats, requiring about 2500 tons of plates, have been closed. A very fair amount of boiler steel is being inquired for and some business has been placed. Mill operations show little change. While some mills quote 1.35c., delivered, for ordinary plates, 1.30c. can readily be done if the business is desirable.

**Structural Material.**—The demand for plain structural shapes has been somewhat lighter, although that for fabricated material is a shade better. Several bridge propositions are being figured on. Proposals have gone in against the Bellevue-Stratford Hotel addition, while specifications for the Manufacturers' Club show requirements to be between 1500 and 2000 tons. A moderate volume of small building work is also in sight, while considerable quantities of boat shapes are being figured on. Quotations for plain shapes are unchanged, 1.30c. to 1.35c., delivered, being named for the ordinary run of business.

**Sheets.**—Eastern mills report a continued good demand for early requirements. Order books are in satisfactory shape and mills are operating at full capacity. Western sheets are moving freely at 2.05c. for No. 28 gauge, delivered here, while Eastern producers, making smooth, loose rolled sheets, obtain ¼c. to ½c. per lb. advance.

**Bars.**—The market is rather quiet. Small sales of refined iron bars are freely made at 1.20c., Eastern mill, equal to 1.27½c., delivered here, although in a few instances this price has been slightly shaded. A moderate volume of business is moving in steel bars, with makers holding firmly at 1.30c. minimum, delivered here.

**Old Material.**—Prices have receded on practically all the leading grades. A recession of prices in other districts has had its influence on this market and quotations represent largely what sellers would accept, although consumers' offers are naturally lower. Some consumers of No. 1 heavy melting steel now offer \$12, delivered. The market is in a transition state and both buyers and sellers are awaiting developments. The following range of prices about represents quotations at which ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to \$1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap.....	\$12.00 to \$12.50
Old steel rails, rerolling (nominal).....	14.25 to 14.75
Low phosphorus heavy melting steel scrap.....	15.50 to 16.00
Old steel axes.....	17.50 to 18.00
Old iron axes.....	22.00 to 23.00
Old iron rails.....	16.50 to 17.50
Old car wheels.....	12.00 to 12.50
No. 1 railroad wrought.....	15.00 to 15.50
Wrought iron pipe.....	12.00 to 12.50
No. 1 forge fire.....	10.00 to 10.50
No. 2 light iron (nominal).....	6.75 to 7.25
Wrought turnings.....	9.00 to 9.50
Cast borings.....	8.00 to 8.50
Machinery cast.....	13.00 to 13.50
Railroad malleable (nominal).....	11.75 to 12.25
Grate bars, railroad (nominal).....	9.75 to 10.25
Stove plate.....	9.50 to 10.00

**Coke.**—With the passing of unfavorable weather conditions the coke market presents a somewhat easier appearance. Owing to delays in delivery, spot coke

had advanced sharply, but eased as working conditions became more favorable. For either prompt or forward furnace coke \$1.75 to \$1.85 at oven about represents the market, although in instances as high as \$2 has been quoted. Foundry coke has not been particularly active; quotations range from \$2.10 to \$2.25 at oven, although in some cases \$2.35 has been asked. The following range of prices per net ton represents the market:

Connellsville furnace coke.....	\$3.90 to \$4.00
Foundry coke.....	4.15 to 4.50
Mountain furnace coke.....	3.65 to 3.75
Foundry coke.....	3.95 to 4.40

## Cleveland

CLEVELAND, OHIO, January 23, 1912.

**Iron Ore.**—While there is an occasional inquiry from a furnace interest, both buyers and sellers appear willing to play a waiting game. Ore firms do not look for the market to open up before April and seem to prefer a late buying movement. Last year very little Lake Superior ore was sold until well along in the spring. Sellers expect a much better volume of sales than a year ago. We quote prices as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—The demand in this immediate territory has fallen off somewhat, although sellers are getting a fair volume of small orders for Northern foundry iron. Most of the large consumers appear to be well covered for either their first quarter or first half requirements. There is practically no inquiry for other grades. The demand for Southern iron in small lots continues fairly active. Prices on Northern foundry iron are firm and local sellers are taking some business at their recent advance of 25c. a ton to \$13.50 for No. 2 foundry, delivered Cleveland. We note one sale of 500 tons to a local foundry at that price for first half delivery. We also note the sale of 6000 tons of carwheel iron for shipment from southern Ohio to St. Louis. Among the new inquiries is one for 8000 tons of Nos. 1 and 2, one-half Northern and one-half Southern, for the LaPorte and Battle Creek plants of an agricultural implement manufacturer. Local sellers are also figuring on an inquiry from the Westinghouse Electric & Mfg. Company for analysis foundry iron for its Cleveland and Pittsburgh plants for second quarter and last half. A northern Ohio consumer is in the market for 3000 tons of Southern iron for first half. Reports indicate that the foundry melt has improved somewhat. We quote the following prices for prompt shipment and for first half, Cleveland:

Bessemer.....	\$15.15
Basic.....	13.25
Northern foundry No. 2.....	\$13.25 to 13.50
Southern foundry No. 2.....	14.35 to 14.85
Gray forge.....	12.50
Jackson County silvery, 6 per cent, silicon.....	17.05

**Coke.**—We note the sale of some small lots of furnace coke for prompt shipment at a minimum price of \$1.80. Prices on this grade are quoted at \$1.80 to \$2. The demand for foundry coke, which was quite active a few days ago, has become quiet, consumers apparently being now well covered. We quote standard Connellsville foundry coke at \$2 to \$2.15, per net ton, at oven, for spot shipment and \$2.15 to \$2.35 for contract.

**Finished Iron and Steel.**—The volume of new business is light. Mills are getting a fair run of specifications on contract but these orders are lighter than a few weeks ago. This falling off is attributed to the fact that many of the larger consumers specified heavily in December, orders in many cases being for two months' requirements. As the actual consumption of material by manufacturers appears to have increased, mill agencies consider the general situation quite satisfactory. The demand is most active for steel bars and some of the mills are having trouble in making deliveries as promptly as desired. In some cases orders have been cancelled because satisfactory deliveries could not be secured. Steel bars are firm at 1.15c., Pittsburgh, for first quarter delivery, and some second quarter contracts are being secured at 1.20c. Plates are only in moderate demand, and, while some of the mills are adhering to the 1.20c. price, sales are generally being made at 1.15c. Structural material is firmer than plates. Mills are generally asking 1.20c. for structural shapes but on a desirable order this

price can, probably, be shaded \$1 a ton. The McClintic-Marshall Construction Company has taken 750 tons for a power house to be built by the Northern Ohio Traction Company at Cuyahoga Falls, Ohio. Another structural order is for 700 tons of material for bridge work. In sheets practically no new business is coming out but specifications are good. New demand for iron bars is light, local mills getting enough orders to keep running about half of the time. We quote iron bars at 1.20c. to 1.25c., Cleveland, mill.

**Old Material.**—The continued absence of a demand has resulted in a softening of the market. There is practically no buying, and prices are weaker although in the absence of actual sales dealers have not revised quotations. Mills are well supplied with scrap and are showing no interest in the matter at present except possibly in small lots offered at attractive prices. Dealers are still holding heavy melting steel at about \$12, but mills are unwilling to pay over \$11.25 to \$11.50. Dealers' prices, f.o.b. Cleveland, are as follows:

Per Gross Ton.	
Old steel rails, rerolling.....	\$12.25 to \$12.75
Old iron rails.....	14.00 to 14.50
Steel car axles.....	17.50 to 18.00
Heavy melting steel.....	11.25 to 11.75
Old car wheels.....	12.25 to 12.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable.....	10.50 to 11.00
Railroad malleable.....	11.75 to 12.00
Light bundled sheet scrap.....	9.50 to 10.00
Per Net Ton.	
Iron car axles.....	\$18.50 to \$19.00
Cast borings.....	6.25 to 6.50
Iron and steel turnings and drillings.....	6.75 to 7.00
Steel axle turnings.....	7.25 to 7.75
No. 1 busheling.....	9.50 to 10.00
No. 1 railroad wrought.....	11.00 to 11.25
No. 1 cast.....	11.25 to 11.75
Stove plate.....	9.00 to 9.25
Bundled tin scrap.....	11.00 to 11.50

## Cincinnati

CINCINNATI, OHIO, January 24, 1912.—(By Telegraph.)

**Pig Iron.**—Consumers here are taking little interest in the situation, and both inquiries and orders are scarcer. However, reports received by head offices here indicate that there are some brighter spots in other sections of the country. The largest inquiry being figured on locally is from a central Indiana melter who wants from 2000 to 3000 tons of analysis iron for a Michigan plant and about 2000 tons of mixed Northern and Southern foundry grades for its Indiana factory, all for first half delivery. For the same shipment a central Ohio consumer is obtaining bids on 1000 tons of low phosphorus iron, and there are a few scattering inquiries for small lots of foundry iron. A central Indiana melter bought 500 tons of Southern No. 2 foundry at \$10, Birmingham, shipments to be extended until July 1. The same quantity of No. 3 foundry was sold to an Illinois buyer at \$9.50, at furnace, and a small lot of Southern No. 1 soft, for a southern Indiana foundry, brought \$10.75, Birmingham, for second quarter movement. Northern No. 2 foundry and malleable are quoted at \$13, Ironton, for first half shipment, with only small lots being contracted for. There has been no third or fourth quarter business booked, unless it was on the part of a few large consumers of foundry iron, who generally keep their contracts under cover as long as possible. The smaller melters are not disposed to purchase that far ahead. Producers of steel making irons have undoubtedly had the best of it so far. Southern charcoal iron is in a little better demand. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows for prompt shipment:

Southern coke, No. 1 foundry and 1 soft.....	\$13.75 to \$14.25
Southern coke, No. 2 foundry and 2 soft.....	13.25 to 13.75
Southern coke, No. 3 foundry.....	12.75 to 13.25
Southern coke, No. 4 foundry.....	12.50 to 13.00
Southern gray forge.....	12.50 to 13.00
Ohio silvery, 8 per cent. silicon.....	16.45 to 16.95
Lake Superior coke, No. 1.....	14.70 to 14.95
Lake Superior coke, No. 2.....	14.20 to 14.45
Lake Superior coke, No. 3.....	13.70 to 13.95
Basic, Northern.....	14.20 to 14.45
Standard Southern car wheel.....	25.25 to 25.50
Lake Superior car wheel.....	19.00

(By Mail.)

**Coke.**—Two Eastern inquiries for a year's supply of furnace coke are reported, but the demand for 48-hr. brands from the Central West is confined to domestic consumers. This particular trade is said to be better than usual. Foundry coke is not in very good demand, but prices are firm, and in the Connellsville, Wise

County and Pocahontas fields standard 72-hr. brands are quoted around \$2 to \$2.15 per net ton at oven for prompt shipment, and from \$2.10 to \$2.30 for contract business. Spot furnace grades continue to demand a premium, especially in the Connellsville district, where as high as \$1.95 has been paid for small quantities. Contract 48-hr. prices range from \$1.70 to \$1.90 per net ton at oven in all three fields.

**Finished Material.**—From a price standpoint the market is in better shape, as recent advances are firmly adhered to, and there are rumors that before the opening of the spring season present quotations will be on a higher level. However, there is very little business being transacted, which, in part, can be blamed on the adverse weather conditions that have recently prevailed. Steel bars are quoted by mill agencies at 1.15c. to 1.20c., Pittsburgh basis, and these same quotations govern on structural material. Local warehouse prices remain around 1.60c. for steel bars and 1.70c. for structural material cut to lengths.

**Old Material.**—All dealers report very little business moving. Prices are also softening, and if prevailing conditions continue much longer a lowering of quotations will be a probable result. The minimum figures given below represent what buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum quotations the selling prices f.o.b. at yards:

Per Net Ton.	
No. 1 railroad wrought.....	\$9.75 to \$10.25
Cast borings.....	5.00 to 5.50
Steel turnings.....	5.50 to 6.00
No. 1 cast scrap.....	10.00 to 10.50
Burnt scrap.....	6.50 to 7.00
Old iron axles.....	16.00 to 16.50
Locomotive tires (smooth inside).....	11.50 to 12.00
Pipe and flues.....	7.00 to 7.50
Malleable scrap.....	7.50 to 8.00

Per Gross Ton.	
Bundled sheet scrap.....	7.00 to 7.50
Old iron rails.....	12.50 to 13.00
Relaying rails, 50 lb. and up.....	20.00 to 21.00
Rerolling steel rails.....	11.00 to 11.50
Melting steel rails.....	9.00 to 9.50
Heavy melting steel scrap.....	9.00 to 9.50
Old car wheels.....	11.00 to 11.50

## Birmingham

BIRMINGHAM, ALA., January 22, 1912.

**Pig Iron.**—Storage warrants to cover 3000 tons of foundry iron on local yards and some 10,000 tons on yards in the North Alabama district were disposed of in the past week. The price consideration as reported in the sales referred to was a basis of \$10 f.o.b. cars at yards for No. 2 foundry, with a differential of 50c. per ton for the lower grades. Such figures mean a concession from a strict \$10 Birmingham schedule when shipments are made into certain territory, owing to the freight advantages to be had; however, the transactions referred to were on a cash basis. As to the delivery of the tonnage mentioned, it is quite probable that storage arrangements have been made and that shipments will be made over an indefinite period, as it is understood that merchant interests were the largest buyers. The recent demand from the regular trade has involved a fairly attractive tonnage in the aggregate, with individual requirements ranging from 150 to 500 tons each, all for comparatively early shipments. For this last mentioned \$10.25 Birmingham was obtained for No. 2 soft in some instances, and is now being quoted by the majority of the producers on second quarter deliveries. Indications for the maintenance of an advance for second quarter shipments are considered more favorable by reason of the increase in the actual movement from furnace yards and the fact that the output has been further reduced. With the blowing out of one stack on foundry iron during the week, only 14 stacks are left in blast on such iron, and an additional stack is to be blown out within a short time. It is understood that one stack is to be blown in about March 1, but no definite announcement has been made in that connection. An improvement in the inquiry from all quarters of the trade has been noted, and the fact that some tonnage is being engaged for speculative purposes is not overlooked. At this time 5000 tons of Nos. 3 and 4 foundry and gray forge is wanted by a pipe manufacturer, and additional tonnage is expected to come from the same source at an early date in view of the large contracts for water pipe that have just been placed. There is quite a disposition among the leading melters to feel the market for deliveries after July 1, but so far as is known the fur-



nace interests have not committed themselves. We continue to quote the market for shipment in the first half as below, per gross ton, f.o.b. cars, Birmingham:

No. 1 foundry and No. 1 soft.....	\$10.00
No. 2 foundry and No. 2 soft.....	10.00
No. 3 foundry.....	9.50
No. 4 foundry.....	9.25
Gray forge.....	9.00
Standard basic.....	10.00
Off basic.....	9.50

**Cast Iron Pipe.**—The result of bids on water pipe requirements for Macon, Ga., is not yet known, and the tonnage for Albany, Ga., mentioned in last report, is still pending. The movement against contracts has increased materially and local plants are again in operation after having been forced to close down by reason of the extremely cold weather. It is understood that the United States Cast Iron Pipe & Foundry Company will put the Dimmick plant, at North Birmingham, Ala., in operation about March 1, but without confirmation from authoritative sources. There is still a fair demand for small lots of water and gas pipe, and considerable tonnage has just been submitted for use in railroad construction. Prices are considered at about the same level as for some weeks, and we continue to quote as follows, per net ton, f.o.b. cars here for water pipe, with \$1 per ton extra for gas pipe: 4 to 6-in., \$23; 8 to 12-in., \$22; over 12-in., average \$21. Special fittings are quotable at from \$50 to \$55 per net ton at Birmingham foundries.

**Old Material.**—Dealers do not report any material change in conditions. The demand for certain grades continues fairly strong, but as a whole the market is not entirely satisfactory. The most discouraging feature at this time is the absence of a demand from the North and East, in which territories stocks are understood to be unusually heavy. Prices cannot be revised with accuracy, but the schedule below is considered a fair representative of values. We quote per gross ton, nominally, as follows, f.o.b. cars here:

Old iron axles (light).....	\$12.00 to \$12.50
Old steel axles (light).....	11.00 to 11.50
Old iron rails.....	11.00 to 11.50
No. 1 railroad wrought.....	10.00 to 10.50
No. 2 railroad wrought.....	8.50 to 9.00
No. 1 country wrought.....	6.00 to 6.50
No. 2 country wrought.....	5.50 to 6.00
No. 1 machinery.....	8.50 to 9.00
No. 1 steel.....	8.00 to 8.50
Tram car wheels.....	7.50 to 8.00
Standard car wheels.....	9.50 to 10.00
Light cast and stove plate.....	6.00 to 6.50

With the blowing out of No. 1 furnace during the past week, the Vanderbilt plant of the Birmingham Coal & Iron Company is idle, without raw material or finished product left on hand. It is now understood that this property will be taken over by the Woodward Iron Company February 1, and developments as to operations after that time are being awaited with interest.

## St. Louis

ST. LOUIS, Mo., January 22, 1912.

The market generally has ruled quiet during the past week, but with no tendency toward a lowering of prices. There is a growing impression that as soon as consideration of second quarter needs becomes a live subject there will be better business.

**Pig Iron.**—The quiet in pig iron since the first of the year remains unbroken for the most part. The sales of the week include a large lot of carwheel iron, Wellston, to the American Car & Foundry Company, and about 1800 tons of No. 2 Northern foundry to an Iowa consumer. Most representatives of furnaces hold No. 2 at \$10.50, Birmingham, and do not find it necessary to quote lower than that though there are some brands to be had at \$10 but they are in limited demand. No. 2 Northern is quotable at \$13, Iron-ton basis.

**Coke.**—Consumers are apparently satisfied to take what they need at the market. Few are making contracts for future delivery. Sales of the week include 300 tons for quick delivery in the foundry grade, which continues to hold a stiff position. By-product coke is well held at \$5.20, delivered, and sales of the week included one of 1000 tons for first half delivery.

**Finished Iron and Steel.**—New business is lacking but there has been a steady movement forward on existing contracts and an increased tendency to call for shipments in advance of contracts. In steel rails, standard section, an order for 500 tons for an inter-urban line was placed. No reports have been received

of new construction. Track fastenings have been in good demand at 1.45c. to 1.50c., Chicago. Structural conditions indicate increasing consumption, shipments being anticipated by request from the consumers. In plates prices are a shade firmer than at last report. In bars the orders have been fair and here also anticipation of shipments is the rule. Light rails show no increased demand, the cold spell not having lasted long enough to stir up the mines. Lumber interests are doing nothing. Throughout the market, however, the belief is strong that when the spring business breaks there will be much activity.

**Old Material.**—In the scrap market the buyers and sellers are still watching each other. The only list out this week is from the Frisco and aggregates about 800 tons. Revision of the price list shows some changes, but the figures are very well held. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton.	
Old iron rails.....	\$14.00 to \$14.50
Old steel rails, re-rolling.....	11.50 to 12.00
Old steel rails, less than 3 ft.....	11.00 to 11.50
Relaying rails, standard section, subject to inspection.....	21.50 to 22.00
Old car wheels.....	13.00 to 13.50
Heavy melting steel scrap.....	10.50 to 11.00
Frogs, switches and guards cut apart.....	11.00 to 11.50

Per Net Ton.	
Iron fish plates.....	\$12.50 to \$13.00
Iron car axles.....	18.00 to 18.50
Steel car axles.....	16.00 to 16.50
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	10.50 to 11.00
Railway springs.....	9.75 to 10.25
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	8.00 to 8.50
Mixed borings.....	6.00 to 6.50
No. 1 busheling.....	9.00 to 9.50
No. 1 boilers, cut to sheets and rings.....	8.00 to 8.50
No. 1 cast scrap.....	8.50 to 9.00
Stove plate and light cast scrap.....	8.00 to 8.50
Railroad malleable.....	8.50 to 9.00
Agricultural malleable.....	7.50 to 8.00
Pipes and flues.....	8.00 to 8.50
Railroad sheet and tank scrap.....	7.50 to 8.00
Railroad grate bars.....	8.00 to 8.50
Machine shop turnings.....	7.50 to 8.00

## Buffalo

BUFFALO, N. Y., January 23, 1912.

**Pig Iron.**—The week has shown a fair amount of inquiry for the season, and orders aggregating 4000 to 5000 tons of foundry grades and malleable have been placed, the bulk of the sales being confined to small lots. A number of Eastern buyers are evidently feeling the market to some extent for second quarter delivery and it seems likely that the actual consideration of purchases of iron for delivery to July 1 will soon be taken up in earnest. Pressure on furnaces for rush shipments has not relaxed, and they are still being pushed to the utmost to keep up with the demand for prompt deliveries. The higher schedule of quotations recently established is being adhered to so far as can be ascertained. The ruling price for No. 2 X seems to be \$13.75 at furnace, and one interest reports having refused an order for 3000 tons of gray forge at \$13. We quote as follows, per gross ton, f.o.b. Buffalo, for first half delivery:

No. 1 X foundry.....	\$13.75 to \$14.25
No. 2 X foundry.....	13.75 to 14.00
No. 2 plain.....	13.50 to 13.75
No. 3 foundry.....	13.50
Gray forge.....	13.25 to 13.50
Basic.....	13.75 to 14.25
Malleable.....	14.00 to 14.50
Charcoal.....	15.75 to 17.25

**Finished Iron and Steel.**—Some improvement is noted, both as regards specification on existing contracts and interest in the placement of new ones, and a number of inquiries for good tonnages in bar material are noted. Some agencies report that bar contracts on which specification should have been completed by January 1 have been extended into the first quarter for delivery of the unspecified quantities. An advance of \$1 per ton in wire products has been made by some interests, due to the very large orders that have come on their books in the last 30 days. An inquiry for 500 tons of light rails is noted for the use of a local industry, and the Lackawanna Steel Company has received contract for 15,000 tons of steel rails from the Lackawanna Railroad. The same steel company has also booked a number of other rail orders for good tonnages. There have been no structural awards during the week and nothing but one or two small jobs have been up for figuring, but plans for a number of undertakings are nearing completion and will be ready for figuring within the next two weeks. Among them are a show-room and garage building, Main and North

streets, Buffalo, for the Mobile Construction Company, of new construction. Track fastenings have been in and two apartment buildings at Johnson Park and Delaware avenue and Johnson Park and Elmwood avenue, Buffalo; also the new Vendig Hotel at Philadelphia and the Hotel Hannan at Detroit from plans of Buffalo architects, Esenwein & Johnson, both of which will require large tonnages of steel.

**Old Material.**—The market continues firm and inquiry has increased. Dealers are not inclined to sell any large quantities at the prices offered them, although consumers seem willing and even anxious to take on larger tonnages than for some time, if they could procure them at current prices. Transactions are also greatly restricted by the severe weather conditions, preventing the loading from stock piles. Consequently the only scrap material that is changing hands now is that which has accumulated on tracks and which dealers are inclined to dispose of rather than unload in their yards. Most dealers are of the opinion that the market will soon show decided improvement. We quote as follows, per gross, ton, f.o.b. Buffalo:

Heavy melting steel.....	\$12.50 to \$12.75
Low phosphorus steel.....	15.75 to 16.00
No. 1 railroad wrought.....	14.00 to 14.50
No. 1 railroad and machinery cast scrap....	13.50 to 14.25
Old steel axles.....	18.50 to 19.25
Old iron axles.....	22.00 to 22.50
Old car wheels.....	12.75 to 13.00
Railroad malleable.....	12.75 to 13.00
Boiler plate, sheared.....	13.75 to 14.25
Locomotive grate bars.....	11.00 to 11.25
Pipe and tank.....	9.75 to 10.25
Wrought iron and soft steel turnings.....	7.25 to 7.50
Clean cast borings.....	6.75 to 7.00

## Boston

BOSTON, MASS., January 23, 1912.

**Old Material.**—Prices have advanced 75c. on mixed shafting, 25c. on cotton ties, and \$1 on wrought turnings and cast borings, the classes of scrap for which the demand has been improving for some weeks. The general conditions remain unchanged. The mills are well covered and no further advances are expected at present by the dealers. We this week quote on cast iron car wheels, but as the local market for this material is intermittent and erratic it may not always be possible to give accurate figures. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices.

Heavy melting steel.....	\$9.50 to \$10.00
Low phosphorus steel.....	11.45 to 11.95
Old steel axles.....	14.00 to 14.50
Old iron axles.....	17.00 to 18.00
Mixed shafting.....	13.00 to 14.00
No. 1 wrought and soft steel.....	11.00 to 11.25
Skeleton (bundled).....	7.00 to 7.50
Wrought iron pipe.....	9.25 to 9.50
Cotton ties.....	7.25 to 7.75
No. 2 light.....	4.50 to 5.00
Wrought turnings.....	6.00 to 6.50
Cast borings.....	5.25 to 5.50
Machinery, cast.....	12.50 to 13.00
Malleable.....	9.25 to 9.75
Grate bars.....	6.00 to 6.50
Stove plate.....	8.00 to 8.50
Cast iron car wheels.....	11.75 to 12.00

## The German Iron Market

BERLIN, January 11, 1912.

The firmness of the iron market continues. Trading on the Düsseldorf Exchange has brought out higher prices for basic steel bars. The new price is 110 to 112.50 marks. According to market reports, sales of bars for the second half of the year have already been made at 112 to 113 marks, while a shipment from Lorraine for export is reported to have been sold at 107.50 marks, f. o. b. Antwerp. Several days ago the heavy plate convention raised tank plates 3 marks and boiler plates 5 marks, and the combination controlling ship plates also adopted the latter advance for its specialty. The upward tendency in Germany continues to receive support from the Belgian market. Several days ago a Brussels dispatch reported an advance for plates of all grades for export; the new prices are 122 to 124 shillings for heavy plates; 130 to 132 for medium thicknesses, and 133 to 135 for thin sizes. Iron and basic steel bars were also marked up. A dispatch of yesterday states that an advance on foundry and pud-

dling pig iron of 1 franc and basic iron of 2 francs has just been made. The new prices are 62 to 63 francs for puddling, 69 to 70 francs for foundry and 69 francs for basic.

All reports agree in representing the position of the German market as highly satisfactory. Buying is proceeding at an active pace in all lines where trade combinations are still open to take orders at all, but in some cases buying is temporarily suspended because the mills are completely sold out for a given period and new prices have not yet been adopted for remoter dates. It is reported now that the Pig Iron Syndicate will not resume selling before February, when an advance of 1.50 marks a ton on all grades of iron made in Lorraine-Luxemburg will be adopted. The organization has orders for the first half-year aggregating 1,600,000 tons, which is close up to the total allotments (1,685,000 tons).

German companies which have applied for ore concessions in the Briey district in France are not a little concerned about a law recently adopted by that country. According to it, after a mining company has paid 4 per cent. on its investment the next 20 per cent. falls to the state and only the rest to the company. This apparently does not affect companies already in possession, but only applicants for new concessions. The Siegerland ore producers begin the year favored by a considerable reduction in ore freights to the Silesian district and daily shipments have begun. It is expected that about 150,000 tons a year will be shipped by rail to Silesia. That district produces less than one-third of its own requirements and has to supplement its product with imports from Russia, Sweden and Austria.

The shipments of the Steel Works Union last year in semi-manufactured material, structural shapes and steel rails amounted to 5,808,540 tons, a gain of 601,925 tons over 1910. Shipments of half-rolled material amounted to 1,744,067 tons, a gain of 219,867 tons; structural shapes, 1,983,322 tons, a gain of 178,483 tons, and steel rails and ties 2,081,151 tons, a gain of 203,575 tons. The shipments of these products in December were about 24,000 tons less than in November.

The troubles of the Steel Works Union appear to have grown acute. The efforts of the organization to induce the three big companies now building in Lorraine and Luxemburg to withdraw their claims for large allotments have met with a flat refusal on their part and important members are saying that they will proceed no further in the negotiations for prolonging the combination until those works accept this demand. As their refusal appears to be final, the outlook for prolonging the Union seems to be extremely uncertain.

The stock market was disposed to take a serious view several days ago of the troubles of the Union. Iron shares were accordingly sold down considerably after they had scored good gains in December. For the past two days, however, the stock market has grown more confident under continued excellent reports from the home and foreign iron markets and share prices are again rising. The improved position of the American trade gives much encouragement on this side.

## New York

NEW YORK, January 24, 1912.

**Pig Iron.**—Inquiry from cast iron pipe manufacturers is practically the only development of the week. About 10,000 tons is wanted by two Eastern pipe foundries and there is an inquiry also from a Virginia pipe works. A Connecticut foundry has been in the market for about 1500 tons, including considerable high silicon iron. In general the market is quiet and furnace companies are concluding that their customers are pretty well covered for the first quarter and in many cases for the first half. There is no immediate prospect, therefore, of a large buying movement in the Eastern market. We quote as follows for Northern iron at tide-water: No. 1 foundry, \$15 to \$15.25; No. 2 X, \$14.75 to \$15; No. 2 plain, \$14.50 to \$14.75. We quote Southern iron at \$15 to \$15.25 for No. 1 foundry and \$14.50 to \$14.75 for No. 2.

**Finished Iron and Steel.**—Quietness, but unquestioned belief in the promise of the outlook, describes present conditions. The continued postponement of railroad buying in quantity is regarded as one of the factors progressively adding to the strength of the market. Cases are learned of local weakness, but emphasis cannot be placed on them owing to the possible existence of unknown circumstances contributing to the weakness. A recent offer to shade even \$19.50, Pittsburgh basis, for open-hearth billets, is thought to



indicate an exchange for pig iron disposed of at a rate making it desirable to move the billets. Another instance is the sale of a carload or two of steel bars at less than 1.20c. Chicago, this sale being another proof of the independence of the Chicago market as regards Pittsburgh. The Eastern structural market, as was true last week, was engaged chiefly in closing pending projects. Some of the work reported placed includes the following: 500 tons for the marine hospital, Snug Harbor; 150 tons for the New Haven railroad bridge, Ferry street, New Haven; 950 tons for a loft building on West Thirty-eighth street, which went to A. E. Norton Company; 1300 tons for the loft building at Fourth avenue and Thirty-second street; 300 tons for the Pennsylvania station at Summit avenue, Jersey City; 200 tons for the Boston elevated station at Sullivan square; 200 tons for a power-house at Corinth, N. Y.; 400 tons for the Woodward & Lathrop store, Washington, D. C., and 5000 tons for an office building on Forty-second street, which went two weeks ago to Post & McCord. Quotations remain as follows: Steel bars, plates and plain structural material, 1.31c. to 1.36c.; bar iron, 1.27c. to 1.32c., all New York. Plain material from store, New York, 1.70c. to 1.80c.

**Cast Iron Pipe.**—No additions are made this week to the list of public lettings published in last week's issue. The pipe trade seems somewhat quieter among private buyers also. Carload lots of 6-in. are quoted at \$22 to \$23 per net ton, tidewater.

**Old Material.**—Dealers report an almost entire absence of inquiry from consumers. Those who are obliged to press their holdings on the market are forced to take prices somewhat below recent quotations. Dealers' prices per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting.....	\$9.75 to \$10.25
Heavy melting steel scrap.....	9.75 to 10.25
Relaying rails.....	20.50 to 21.00
Rerolling rails (nominal).....	12.00 to 12.50
Standard hammered iron car axles.....	19.50 to 20.00
Old steel car axles.....	15.00 to 15.50
No. 1 railroad wrought.....	12.00 to 12.50
Wrought iron track scrap.....	11.50 to 12.00
No. 1 yard wrought, long.....	10.50 to 11.00
No. 1 yard wrought, short.....	9.75 to 10.25
Light iron.....	4.50 to 4.75
Cast borings, clean.....	6.25 to 6.50
Wrought turnings.....	6.75 to 7.25
Wrought pipe.....	9.50 to 9.75
Old car wheels.....	12.00 to 12.50
No. 1 heavy cast, broken up.....	11.00 to 11.50
Stove plate.....	8.75 to 9.00
Locomotive grate bars.....	9.00 to 9.50
Malleable cast.....	9.50 to 10.00

The Debevoise-Anderson Company, 95 Liberty street, New York, has been appointed sales agent for the pig iron of the Sloss-Sheffield Steel & Iron Company, Birmingham, Ala., in the territory comprising New Jersey, New York State south of Utica and the State of Connecticut. This agency has been in the hands of Hugh W. Adams & Son, Inc., for many years.

## Metal Market

NEW YORK, January 24, 1912.

### The Week's Prices

		Cents Per Pound for Early Delivery.					
		Copper, New York.		Lead.		Spelter.	
		Electro.	Tin.	New York.	St. Louis.	New York.	St. Louis.
Jan.	Lake.	lytic.	New York.	York.	Louis.	York.	Louis.
18.....	14.50	14.25	43.00	4.45	4.37½	6.65	6.50
19.....	14.50	14.25	42.75	4.45	4.37½	6.60	6.45
20.....	14.50	14.25	.....	4.45	4.37½	6.60	6.45
22.....	14.50	14.25	42.50	4.45	4.37½	6.60	6.45
23.....	14.50	14.25	42.37½	4.45	4.37½	6.55	6.40
24.....	14.50	14.25	42.87½	4.45	4.37½	6.55	6.40

Copper continues dull, with a weaker tendency. Pig tin has shown usual irregularity, but prices hold up well. Lead is dull. Spelter is a little easier, despite the scarcity in some brands. In antimony the unusual situation exists of higher quotations for Hallett's than Cookson's.

### New York

**Copper.**—The past week has seen a continuation of extreme dullness in the copper market, with a tendency toward lower prices. There was even less business than the week before. It is not expected that there will be a renewal of activity in buying until after February 8, when the statement of the Copper Producers' Association for January will be forthcoming. The opinion is held that consumers have not bought heavily into April, and purchasing for this month is expected after the statistics of the producers are made known. Electrolytic copper was quoted to-day at 14.25c. to 14.37½c., although it is understood that these prices are virtually

nominal because of the small demands. Report had it that in some cases second hands were quoting lower figures. Lake copper is quoted at from 14.50c. to 14.62½c. In London copper was quoted to-day at £62 3s. 9d. for spot and £62 18s. 9d. for futures. The exports of copper this month have been 18,648 tons.

**Pig Tin.**—Tin was very quiet up to Saturday of last week, but since then there has been some improvement. The metal is still held at a premium, although recent arrivals, which added to the spot supplies, eased the situation. The greater part of the business done during the week was for February and March delivery. During the entire week the metal has responded to the more or less erratic fluctuations of price in London which are so characteristic of tin. This morning's cable brought the information that spot tin has advanced in London £2 5s., which was immediately reflected in local prices, and 42.87½c. was quoted here. The London price to-day is £191 10s. for spot and £189 10s. for futures. The arrivals of tin this month have been 2875 tons and there are reported afloat 1415 tons.

**Tin Plates.**—The tin plate market has been devoid of special features in the last few days. As previously stated, most of the large business for several months ahead has been placed and the activity is now at the mills. The price of 100-lb. coke plates in New York is unchanged at \$3.64 and the cables report the price of tin plates laid down at Swansea, Wales, as unchanged at 13s. 7½d.

**Lead.**—The lead market is dull and featureless. The New York price is unchanged at 4.45c. In St. Louis 4.37½c. is asked.

**Spelter.**—The scarcity of some brands of spelter continues and prices for such brands are practically nominal. With other brands the price is a little easier, spot being quoted at 6.55c., New York, and 6.40c., St. Louis.

**Antimony.**—Cookson's antimony is quoted at 7.37½c., Hallett's at about 7.55c. and Chinese and Hungarian grades at 6.90c. It is regarded by the trade as strange that Cookson's is lower than Hallett's. While interested in the circumstance, sellers say they know no reason for the prevailing prices.

**Old Metals.**—The demand continues quiet. Dealers' selling prices are unchanged, as follows:

	Cents per lb.
Copper, heavy and crucible.....	13.50 to 14.00
Copper, heavy and wire.....	13.25 to 13.50
Copper, light and bottoms.....	12.00 to 12.25
Brass, heavy.....	9.25 to 9.50
Brass, light.....	7.25 to 7.50
Heavy machine composition.....	11.25 to 11.50
Clean brass turnings.....	8.75 to 9.00
Composition turnings.....	9.50 to 10.00
Lead, heavy.....	4.25
Lead, tea.....	4.00
Zinc, scrap.....	3.25

### Chicago

**JANUARY 23.**—The local metal market has been decidedly quiet, with little of interest to characterize the situation. We quote at Chicago as follows: Casting copper, 14.50c.; Lake, 14.75c., in carloads for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, carloads, 43.50c.; small lots, 45.50c.; lead, desilverized, 4.40c. to 4.45c., for 50-ton lots; corroding, 4.55c. to 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.50c. to 6.60c.; Cookson's antimony, 8.75c., and other grades, 7.75c. to 8.25c., in small lots; sheet zinc is \$8, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount, in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 11.75c.; copper bottoms, 10.75c.; copper clips, 11.50c.; red brass, 11c.; yellow brass, 8.50c.; lead pipe, 4c.; zinc, 4.25c.; pewter, No. 1, 26c.; tin foil, 33c.; block tin pipe, 38c.

### St. Louis

**JANUARY 22.**—The metal markets have been rather quiet, in part due to the period of the year and in part to the severe weather. Lead is quotable to-day at 4.35c. to 4.40c. and quiet. Spelter is also slow at 6.50c. to 6.55c. Tin is lower at 43.10c. Copper is higher, with Lake at 14.80c., and electrolytic at 14.70c. Cookson's antimony is lower at 7.85c. In the Joplin mining district the past week the top price for zinc blende was \$50 per ton, ranging down to \$42 per ton, according to grade. The curtailment of production caused a strong demand. The current week, with better weather, will see a much heavier output. The surplus reserves have been cut to about 5500 tons, which is barely a normal week's output. Calamine prices were firm at \$22 to \$27 per ton, and choice lots brought as high as \$30. Lead ore was unsteady at \$55 to \$58 per ton, with a very few

extra choice lots selling at \$60. On miscellaneous scrap we quote: Light brass, 4.50c.; heavy brass and light copper, 8.50c.; heavy copper and copper wire, 9.50c.; zinc, 3.50c.; pewter, 20c.; lead, 3.50c.; tin foil, 29c.; tea lead, 3c.

## Iron and Industrial Stocks

NEW YORK, January 24, 1912.

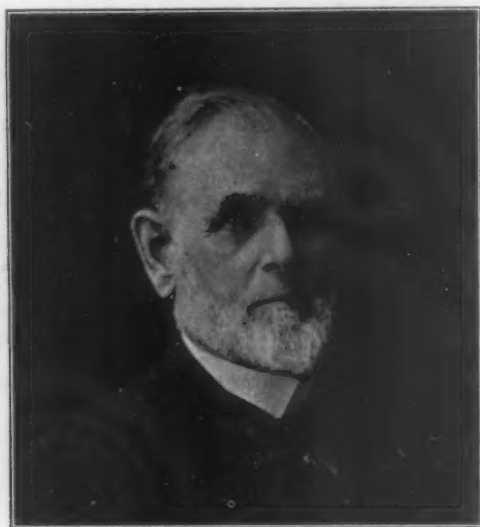
Stock market conditions have generally been conducive to strength, but a slight chill followed the publication on Monday of the proposed revision of duties on iron and steel. This caused a special recession in the price of United States Steel stocks. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.....	1	Pressed Steel, com. 32 - 33	
Allis-Chalm., pref.....	6½	Pressed Steel, pref.....	101½
Baldwin Loco., pref. 103 - 103½		Railway Spring, com. 29½ - 30½	
Beth. Steel, com. 31 - 32½		Republic, com. 25½ - 26½	
Beth. Steel, pref. 61½ - 61½		Republic, pref. 85 - 85½	
Can, com.....	11¼ - 12¾	U. S. Steel, com. 65½ - 67½	
Can, pref.....	91¾ - 94	U. S. Steel, pref.....	110½ - 111½
Car & Fdry., com.....	52 - 53½	Westinghouse Elec. 72¾ - 74	
Car & Fdry., pref. 115½ - 116½		Va. I. C. & C. 70 - 74	
Steel Foundries.....	26 - 32	Am. Ship, com.....	50
Colorado Fuel.....	26¼ - 26¾	Am. Ship, pref.....	103 - 104½
General Electric.....	158½ - 160	Chic. Pneu. Tool.....	47¾ - 49¼
Gr. N. Ore Cert.....	39¾ - 42¼	Cambria Steel.....	43¾ - 44½
Int. Harv., com.....	108	Lake Sup. Corp. 28½ - 28¾	
Int. Pump, com.....	30¾ - 31½	Pa. Steel, pref.....	100½ - 101
Int. Pump, pref.....	83 - 83¾	Warwick.....	11 - 11¼
Lackawanna Steel.....	30½	Crucible Steel, com. 12¼ - 12¾	
Nat. En. & St., com.....	14½	Crucible Steel, pref. 83½ - 84	

## Obituary

### The Late Franklin Farrel

Herewith a portrait is presented of the late Franklin Farrel, president of the Farrel Foundry & Machine Com-



FRANKLIN FARREL

pany, Ansonia, Conn., whose obituary was printed in *The Iron Age* of January 18, page 226.

WILLIAM DONALDSON, superintendent and secretary of the Champion Tool Works Company, Cincinnati, Ohio, died at his home in Ludlow, Ky., January 15, aged 70 years. He was born in Cincinnati and commenced his trade as a machinist at the early age of 12, which business he followed all his life, except to serve through the Civil War as a quarter gunner on the Chillicothe, plying on the Mississippi River. In the early seventies he was for a number of years in business in Cincinnati as a manufacturer of screw cutting engine lathes. His later work, after disposing of his lathe business, was as superintendent and designer of machine tools for a number of the most prominent shops in Cincinnati, having at different times been connected in these capacities with the Lodge & Davis Machine Tool Company, American Tool Works Company, Fosdick Machine Tool Company, Bradford Machine Tool Company, Dreses Machine Tool Company, and Greaves, Klusman & Co. For the six years prior to his death he was connected with the Champion Tool Works Company. Having had very wide experience in the design and manu-

facture of the various types of machine tools, he was frequently consulted as a patent expert and in other advisory capacities in the design and construction of intricate machinery for various purposes.

FRANKLIN E. SNOW, vice-president of the Wells Brothers Company, Greenfield, Mass., died January 6, aged 63 years. For a long time he had been treasurer and general manager, but in the last few years had retired from active participation in the conduct of the company in whose growth and successful development he was a prominent factor. He was born in Griswoldville, Mass., educated in the public schools of Greenfield and Chicago, and up to 1880 was mainly engaged in the banking business, his experience covering Negaunee, Mich.; Halifax, Nova Scotia and Chicago. In 1880 he returned to Greenfield to become associated with the firm afterward incorporated as the Wells Brothers Company. He was also interested in the Greenfield Machine Company, of which he was president, and at the time of his death he was a director of the First National Bank and trustee of the Franklin Savings Institution. At one time he was trustee of Smith charities, he served a year as president of the Board of Trade, and in 1910 he was named trustee of the Northampton Insane Hospital. He was prominent in all local movements and had attained eminence in social and benevolent societies. He leaves a widow and three daughters.

HENRY D. COFFINBERRY, a prominent citizen of Cleveland, Ohio, and director of the Brown Hoisting Machinery Company, and interested in other large concerns, died suddenly January 17 of heart failure, aged 71 years. For a long period he was quite active in the shipbuilding industry in Cleveland, having been a partner in the firm of Robert Wallace & Co., which was later merged in the Globe Iron Works and finally became part of the American Shipbuilding Company. With the exception of serving two terms as city treasurer of Cleveland, he had devoted his time in the past few years largely to his personal interests.

HORACE S. ALLEN, who had been prominently identified with the Upson Nut Company, Cleveland, for 35 years, died January 17, aged 66 years. He had been purchasing agent for the company the past few years.

FRANK E. STOCKHOFF, for 20 years secretary of the Stockhoff Supply Company, dealer in heavy metal supplies, died in St. Louis last week aged 41 years.

GEORGE D. EVANS, manager of the plant of the Carnahan Sheet & Tin Plate Company, Canton, Ohio, died January 16, aged 63 years. Overcome by heat at the plant last July, he became paralyzed and was confined to his bed. He was born in England and came to the United States in 1892. For a number of years he was connected with different plants of the American Sheet & Tin Plate Company.

WALES L. PALMER, founder of the Golden State & Miners' Iron Works, San Francisco, Cal., manufacturing dredging machinery, died at his home in Oakland Jan. 9, aged 77 years. He was a native of Maine, but had been prominent in the San Francisco machinery business for the last 50 years.

### Joseph T. Ryerson & Son's New Offices

Joseph T. Ryerson & Son, Chicago, announce the opening of a district office at 828 Ford Building, Detroit, Mich., to be in charge of R. J. Stayman and J. H. Marlotte. Mr. Marlotte will act as a special representative, handling the Ryerson line of machine tools, fabricating equipment, railroad shop machinery, high-speed drills and other tools. The office will also handle the regular rolled steel products.

They also call attention to the removal of their offices in Minneapolis, Minn., to larger and more desirable space at 501 Third street South. William H. Sherwin continues in charge of the office, with improved facilities for the display and demonstration of the various lines of iron and steel, machinery and specialties.

### Two New Ore Freighters Ordered

The Pittsburgh Steamship Company has placed an order with the American Shipbuilding Company for two 600-ft. boats of the Isherwood type for delivery in the latter part of the summer. They will cost about \$400,000 each.



# President Farrell Before the Stanley Committee

Government Supervision Conceded, but Price Fixing Opposed—Lower Carbon Rails Urged in the Interest of Safety—Steel Monopoly Impossible

James A. Farrell, president of the United States Steel Corporation, appeared before the Stanley Committee at Washington Monday, January 22. At the outset a question arose as to the minutes of meetings of the Carnegie Steel Company, also of the presidents of the various subsidiaries of the Steel Corporation. Mr. Farrell said that he had no knowledge of these records in either case. Counsel for the corporation urged that, while cost sheets would be produced for the inspection of the committee, it would be damaging to the interests of the corporation, particularly in its foreign trade, if these were made public. It was tentatively agreed that the committee accountant should examine the cost sheets of the corporation to verify figures to be submitted by it regarding composite costs of production.

## Mr. Farrell's Views in Brief

The salient points in Mr. Farrell's views as expressed on Monday and Tuesday, were the following:

There should be such Federal supervision of large corporations as will insure full publicity.

Dissent from Andrew Carnegie's plan of Federal price fixing.

Advocating the Canadian and German plans of agreement among manufacturers as to prices.

There is no monopoly in steel manufacture in the United States and cannot be.

Steel rails are sold more cheaply in the United States than abroad.

The high carbons demanded for steel rails by the railroads have brought the use of such rails close to the danger line.

Social engineers who clamor for better steel works conditions for labor know nothing about the business and are indulging in words, while the Steel Corporation has constantly raised wages and is eliminating the seven-day week.

The smaller steelmakers make market prices, not the Steel Corporation.

The talk about steel rails being sold cheaper abroad is wide of the mark, since the price of rails in the United States "is cheaper to the consumer than in any other country."

Saying that Andrew Carnegie had not been in the steel business in eleven years, Mr. Farrell suggested that the Stanley Committee must have been "surprised at the facility with which he yielded information."

## The Government and Price Fixing

On the question of Government supervision, Mr. Farrell said:

"I believe it is important for the Government to assume the power of such supervision of corporations engaged in interstate traffic as will result in full and clear publicity of their general operations, their receipts and expenditures and profits and losses, in order to protect investors and the people generally. Such a supervisory board could not only be authorized to compel such necessary publicity, but empowered, in the case of any corporation not presenting information as to the details required by the law which may be enacted, to investigate into the conduct of its business, with a view to full exposure of its methods. Such publicity as I have in mind is along the lines of the information that has been freely and fully given out by the Steel Corporation in its annual reports and frequent statements.

"It would appear to be absolutely impracticable for the Government to attempt to fix prices of all commodities, even those manufactured only by the steel industry, in view of the hundreds of thousands of variations of shapes, sizes, sections, gauges, kinds, qualities, etc. When it is considered that it requires a large corps of experts in each of the manufacturing companies of the United States Steel Corporation alone to determine the costs of hun-

dreds of thousands of articles or variations of products which those companies make, it can be readily understood that it would require hundreds of experts merely to determine suitable prices for the steel industry alone without considering the thousands of other industries in the United States, each of which would be equally entitled to have prices fixed on their multitude of products.

"If the question be considered from the standpoint of fixing maximum prices, it would seem equally impracticable for the reasons just cited, as well as the difficulty of satisfying the many manufacturers engaged in the same line of trade, each of whom has different costs of manufacture to produce the same or similar articles. It would seem unnecessary to point out many other objections, including the necessity of frequently altering the fixed prices to accord with the laws of supply and demand, the changeable costs of manufacture, contingent on the volume of the production and other exigencies of manufacture. As a corollary to the fixing of changeable or maximum prices would be the inevitable necessity of fixing maximum and minimum wages to labor, as it is necessary, according to theorists and economists, that the wages of labor must be commensurate with the article which it manufactures or which it directly or indirectly consumes."

## What Should Be Permitted in Price Fixing

Mr. Farrell suggested that a practicable plan of preventing competition to drive weak producers out of business and of establishing fair prices was a law similar to that in Canada, and which, in effect, is the practice in Germany.

"When it might appear to the Government Board of Supervision, either on their own initiative, or from the complaint of any considerable body of consumers, that prices in any line of industry are unreasonably high, they should be empowered to make inquiry into the facts, to call upon manufacturers to disclose their profits, and to determine and indicate to manufacturers their opinion as to the reasonableness of their price, subject, if necessary, to review by the courts, as to any contention that prices were confiscatory.

"As the Sherman law is designed to prohibit monopoly, which would inevitably result from destructive competition, driving the weaker competitors out of business, it should be equally clear that it should permit such agreements among manufacturers as to prices as would enable them to avoid the destructive competition which is impliedly prohibited."

## Rail Steel Too Hard

Mr. Farrell made a distinct impression on the members of the committee in what he said as to the carbon content of steel rails as called for by the railroads:

"The public demands, and rightly, that railroad transportation shall be safe and that rails shall not break. I am absolutely convinced that if the railroads are to accomplish this they must be prepared to face a greater wear on steel rails. In other words, under the severe and often unknown demands of modern railroad traffic choice must be made between safety and wearing quality in steel rails.

"Beginning about 1890, the railroads of the United States began asking for higher carbon in steel rails, to secure great wear; and the railmakers unwisely, and many times under protest, made the quality of steel demanded. Gradually the specifications called for still higher carbon, until today I believe the steel is within the danger zone of brittleness.

"It is true, many of these hard rails never break, but the liability to breakage is much greater than in the old-time softer steel, and the influence of the unavoidable contingencies of manufacture, such as seams, pipes, and segregation, is much greater. In many respects the steel is more doubtful, more dangerous, and more treacherous.

It is unquestionably, in my judgment, an unsafe grade of steel, in view of the severe conditions of service.

"If safety is to be the first consideration lower carbon and softer steel would seem to be necessary. With such steel the various unavoidable defects or variations of commercial rails would be far less dangerous. I believe I am correct in saying that harder steel is used in rails in the United States than in any other country, yet our wheel loads and train loads are much greater than those on foreign roads."

#### Not Grabbing for Export Trade

"A monopoly of the iron and steel trade in this country," said Mr. Farrell, "is neither possible nor desirable. There is no monopoly, or anything approaching it. Since the Steel Corporation was organized there has been much new capital attracted to the industry, and many furnaces have been built which are not controlled by the Steel Corporation."

"It is charged that the corporation is seeking to drive other countries out of the export market. That is far from the truth. The British steel industry must export 40 per cent. of the product a year in order to live. Germany must export 50 per cent., and Belgium 80 per cent. The product of the United States is greater than England, Germany and Belgium combined, and the domestic consumption is so much greater that export trade is not so vital. It is true that before the Steel Corporation was formed the steel exports of the United States amounted to about 200,000 tons a year. Last year the exports of the United States Steel Corporation were about 2,000,000 tons, valued at \$69,000,000, as against Germany's 5,000,000 tons."

"It is not the aim of the Steel Corporation to grab the export trade of the world. We are conducting our export business on a safe and sane basis, without any jealousy toward other nations to whom export trade is of such vital importance."

Mr. Farrell said the basic price on rails sold to foreign countries was lower than the domestic rate, but that the company sought to get as high prices as possible. He gave the committee the tariffs on steel rails in various countries, as follows: Germany, \$6.03 a ton; France, \$17.70; Russia, \$28.60; Spain and Italy, \$11.76; Austria-Hungary, \$12.32, and Canada, \$7.84. The duty on rails in the United States under the Payne-Aldrich law is \$3.92. The Steel Corporation, Mr. Farrell declared, does a much greater export business in other steel products than in rails, owing to the high rail tariffs.

#### Indiana Industrial Conditions

Reports on the general situation and outlook in the State have been made to Melville W. Mix, president of the Manufacturers' Bureau of Indiana, and president and general manager of the Dodge Mfg. Company, Mishawaka, Ind. These reports represent every section and relate to agricultural implements, stoves, furniture, sanitary ware, iron goods, tools, machinery, lumber, paper, vehicles, glass, textile goods, steam specialties, iron, steel, cement, liquors, medicine, tinplate, bricks, terra cotta, tile, sewer pipe, baskets, leather goods, novelties, etc.

Of the total number of reports received 27 per cent. tell of new industries locating in their vicinity, and 26 per cent. show improvement or additions to plants for 1912. Of 80 per cent. indicating percentage operation as compared with past three years, 18 per cent. report increase, 40 per cent. report percentage same, and 22 per cent. report decrease.

Of 100 per cent. reporting on the outlook for the ensuing year, 56 per cent. say fair, 31 per cent. say good, 7 per cent. say excellent, and 6 per cent. say bad.

#### Comparison of Business in 1911

In the table compiled by Mr. Mix from the reports sent in he shows increase and decrease of sales for 1911, increase and decrease of employees for the same year, and increase in capacity.

Of 50 per cent. reporting increase in sales for 1911 over 1910, 23 per cent. indicate up to 15 per cent. decrease; 12 per cent. up to 25 and 50 per cent. increase; 4 per cent. 50 to 100 per cent. increase, and 1 per cent. over 100 per cent. increase.

Of 38 per cent. reporting decrease in sales for 1911 over 1910, 23 per cent. indicate up to 15 per cent. decrease; 9 per cent. 15 to 25 per cent. decrease; 4 per cent. 25 to 50 per cent. decrease; 2 per cent. 50 to 75 per cent. decrease.

Of the 15 per cent. reporting an increase in number employed, 9 per cent. show up to 15 per cent. increase; 4 per cent. 15 to 25 per cent. increase, and 2 per cent. 25 to 50 per cent. increase.

Of the 20 per cent. reporting a decrease in number employed, 12 per cent. say up to 15 per cent. decrease; 5 per cent. 15 to 25 per cent. decrease; 2 per cent. 50 to 75 per cent. decrease.

Of the 35 per cent. reporting an increase in capacity, 25 per cent. show up to 25 per cent. increase; 6 per cent. 25 to 50 per cent. increase; 1 per cent. 50 to 100 per cent. increase, and 5 per cent. over 100 per cent. increase.

#### President Mix's Views

"It is interesting to note," says Mr. Mix, "that at the close of the old year practically every industry of importance in the State is in operation. During the autumn months a number of factories reduced their working hours, and a number continued the Saturday half holiday indefinitely from the summer term."

"A presidential campaign is on us, and the political pot is boiling, but there are only a few predictions that it means a bad year. The majority talk, as reports received from the Manufacturers' Bureau show, is on the bright, sensible side. All indications are that business is to go right along without any nervousness or backsets from probabilities of tariff revision, change in administration and trust prosecutions."

"Commercial and industrial supplies are low, according to latest reports, and much of the inflation is gone from stocks and bonds. Even if there should come a stampede for the worst, of which there are no signs whatever, I believe the country at large is ready. I feel pretty sure that the State of Indiana is."

"I think that the whole trouble with conditions is that the average producer loses his nerve in time of need. Men think too much of retrenchment, politics, unsettled issues and other elements which lend themselves to exaggeration. The things which cause us the greatest concern are the things that never happen."

#### A British Pool in Light Iron Castings

Notices were recently sent out by a large number of foundries in Great Britain producing light iron castings, of an advance in prices averaging 10 per cent. This is reported to be the result of a pool in this trade formed under the name of the National Light Castings Association. The competition in light iron castings has long been so keen that business was done at unremunerative prices. At the first proposal of the scheme for a pool about 80 out of 130 firms concerned favored the arrangement. Since then efforts have been made to secure the co-operation of the remainder and the Ironmonger now says that all the principal foundries have given their support to the movement.

The U. S. Metal & Mfg. Company, whose general offices are located at 165 Broadway, New York, held its twelfth annual meeting at Plainfield, N. J., January 16. The directors, B. A. Hegeman, Jr., W. J. R. Hegeman and M. Jackson Crispin, were unanimously re-elected. On the organization of the board the following officers were elected for the ensuing year: B. A. Hegeman, Jr., president; M. Jackson Crispin, general manager and treasurer; R. G. Jeffery, secretary and assistant treasurer.

L. V. McKesson and George B. Storer have purchased from Foster W. Jewell the controlling interest in the Standard Steel Tube Company, which owns a plant at Detroit and Fitchland avenues, Toledo, Ohio. At the recent annual meeting of the company Mr. Jewell retired as president and manager. L. V. McKesson was elected president and George B. Storer vice-president, treasurer and manager. R. F. Wieland was re-elected secretary.



# The Machinery Markets

In various machinery centers probabilities of the future, rather than what is actually doing, seem to be the dominant feature in statements of conditions during the last week. New York has much in prospect in the way of pending trade, and has done a fair amount of business since the last report. Competition has been keen and only hard work has brought orders in most instances. Philadelphia has been quiet with purchases reluctantly made. Chicago still feels the effects of cold weather reflected in moderated demand. The Cleveland outlook is better than at this time last year. Cincinnati regards the machine tool business as unsatisfactory but is looking for greater activity as the result of automobile factory extensions. There has been little change in New England, but conditions are favorable. Detroit has been somewhat quiet, although several inquiries have been closed or are about to be. St. Louis has had a fair number of inquiries but none which run into large figures. The Pacific coast has had enough small orders to bring trade up to expectations.

## New York

NEW YORK, January 24, 1912.

The trend of business the past week has been fairly satisfactory to New York machinery dealers. Salesmen have had to work hard for the orders they received. A large part of the selling has been largely of single tools, or two or three at the most, but the total of sales will reach a very good figure. The Pennsylvania Railroad quietly continues its buying of one or a few tools at a time and has been getting the benefit of keen competition. Buying by the railroads is proceeding very slowly for the most part. Rumors have been current that the New York, New Haven & Hartford Railroad is about to place orders on a list which has been out for several months, but no confirmation is forthcoming at the present time. A large amount of business is pending and should it all come at once it would mean almost a boom in the machinery trade, but purchasing agents seem reluctant to take decisive action. Manufacturing interests have been probably the best customers during the week. Among them may be mentioned the Morrow Mfg. Company, Elmira, N. Y., maker of automobile parts, which purchased a fair list of general tools. Now that the New York automobile shows are over and the season's automobiles have been exploited more business is expected from manufacturers of automobiles and accessories.

A. R. Mosler & Co., manufacturers of spark plugs, expect to get into their new factory in the Bronx about February 15. The equipment is not yet entirely installed. The present plant is at 163 West Twenty-ninth street.

The Thorp Iron Company, a new incorporation with offices and plant at 626-628 West Twenty-fourth street, New York City, has equipped its shop with most of the heavy necessary tools, but is in the market for estimates on light tools such as speed drills, punches, etc.

The Clifton Automobile Company, Union Hill, N. J., has been organized to deal in automobiles. The company has secured a site and is having plans prepared for a building, 50 x 200 ft., one story, of which a machine and repair shop is to be a feature. The company is now ready to purchase the equipment. Good second-hand machinery will be considered. Benjamin F. Krom, 73 Liberty street, is manager.

The Inman Mfg. Company, Amsterdam, N. Y., has been incorporated with \$300,000 capital stock to continue the business formerly conducted by Horace Inman, manufacturer of paper box and paper cutting machinery, for over 30 years at Amsterdam. The facilities of the company are inadequate and plans are under way for enlarging the plant. The officers of the company are Horace Inman, president; C. H. Inman, vice-president; E. H. Eldridge, treasurer, and J. J. Delaney, secretary.

The Central Casket Company, 45 Niagara street, Buffalo, N. Y., has commenced the erection of its new plant, 75 x 150 ft., two stories, brick and concrete construction, at Manitoba street and the Erie Railroad. Upon completion considerable new woodworking machinery will be required in addition to the equipment to be moved from the company's present plant at Chicago and Ohio streets.

The Buffalo Auto Novelty Company, Buffalo, N. Y., has been incorporated by George A. Orr, Prudential Building; Donald S. Carroll and Henry L. Jauch, and will engage in the manufacture of automobile accessories and supplies.

Rice & Adams, Buffalo, manufacturers of dairy machinery, will build an extensive addition to their plant on Chandler street and the New York Central Railroad belt line, for which necessary land has just been purchased.

The National Pure Water Company, Buffalo, will build a distilling and bottling plant at 73 West Mohawk street, that city.

The Centaur Mfg. Company, Buffalo, has been incorporated with a capital stock of \$35,000, and will equip a plant for the manufacture of automobile appliances. The directors are A. and B. Schmidt and J. E. Barry, Buffalo.

The F. C. LaRue Soap Company, Buffalo, N. Y., recently incorporated with a capital stock of \$25,000, will equip a soap manufacturing plant. The directors are Frederick C. LaRue, Frank L. Small and Harold E. Hughes.

The Buffalo Corrugated Paper Box Company, Buffalo, N. Y., has purchased a site and will erect and equip a factory at Imson street and the Lehigh Valley Railroad. H. M. Sickler, president, 14 Scott street.

The J. L. Schwartz Brewing Company, Buffalo, N. Y., will build and equip a refrigerating plant and bottling works on West Bennett street, to cost \$50,000.

The Crossett Concrete Company, Binghamton, N. Y., is preparing plans for a factory 30 x 100 ft. which it will erect and equip with requisite presses and molding machinery for the manufacture of cement blocks.

The Rochester Hook & Eye Company, Rochester, N. Y., has been incorporated by H. Satterlee, J. S. Fitch and H. D. Van Duser, with a capital stock of \$40,000, and will equip a plant for the manufacture of hooks and eyes.

The Odsonia Mills Company, Falconer, N. Y., an auxiliary of the Cleveland Worsted Mills Company, Cleveland, Ohio, will build an addition to its plant 60 x 120 ft.

The Sunderman Safety Carbureter Company, Newburgh, N. Y., has been incorporated with \$50,000 capital stock, to manufacture and deal in patented devices, carbureters, etc. F. R. Sunderman, J. D. Lacey and W. L. Walker, Newburgh, are the incorporators.

The Superior Register Company, Canisteo, N. Y., has been incorporated with a capital stock of \$500,000, to manufacture cash register apparatus, etc. The incorporators are J. P. Langs, M. Cohen, Jr., and F. Chormann, Niagara Falls.

The Monarch Musical Instrument Company, North Tonawanda, N. Y., has been incorporated and will establish and equip a factory for the manufacture of automatic playing pianos and organs.

The Empire Case Goods Company, Jamestown, N. Y., has been incorporated and will build and equip a plant in that city for the manufacture of furniture, etc. The amount of capital stock is \$250,000. The directors are F. O. and H. G. Anderson and A. Peters, Jamestown.

The Sarco Engineering Company, Cold Spring, N. Y., has been incorporated with a capital stock of \$100,000, to manufacture engineering and scientific instruments and supplies. The directors are A. Wiedenbach, C. W. Francis and H. M. Brigham, New York City.

The engineers of the Water Board, Troy, N. Y., have completed plans for a municipal water-works system to be constructed in that city.

## New England

Boston, Mass., January 23, 1912.

Little has transpired to change the aspect of business conditions as they affect the machinery trade and the metal industry as a whole. If anything, business is increasing, but it is too soon after the first of the year to experience a marked improvement. Had one occurred in the first half of January it would have been very exceptional.

The trouble arising from the new 54-hour law seems to be confined to the textile mills at Lawrence, Mass., where rioting has compelled the use of the state troops to protect the property owners.

It is a source of satisfaction to Boston houses that the Fore River Shipbuilding Company has received the contract for one of the two new battleships, the Nevada. The company is well equipped to carry out this work, as the ship is of about the same size and type as the Argentine Republic's battleship Rivadavia, which was launched in September, and therefore less new equipment than usual will be required, according to the general impressions of the trade. However, the location of the contract in Massachusetts places a vast amount of business for those Boston merchants who have exclusive territorial rights.

The Maine coast cities and towns have for years hoped to utilize the tremendous tides of its harbors, especially those at the North, for power purposes. Various experimental tests have been established and some good engineers believe that the problem will be solved in the not distant future. The latest word is the incorporation in Maine of the Maine Hydraulic Power Company of Bath to obtain power "from the tides and waves of salt or fresh water, as described under letters patent issued to Thomas A. MacDonald and others." The president and treasurer is William S. Maxwell, Paterson, N. J., and the clerk is N. Gratz, Jackson, Bath, Maine.

The Richmond Mfg. Company has established a factory at 45 Cross street, Portland, Maine, for the manufacture of sheet metal goods. E. O. Little, formerly with the E. E. Cutter Company, is the manager.

The A. H. Wells Company, Waterbury, Conn., manufacturer of copper and composition tubing, will increase its plant by the erection of a one-story brick building 35 x 55 ft.

The Waterville Corporation, Waterville, Conn., will erect a one-story brick factory building 120 x 300 ft.

The G. C. A. Mfg. Company, Agricultural Bank Building, Pittsfield, Mass., has been incorporated with a Massachusetts charter to manufacture tools, etc. Harry C. Crafts is the president, Harold D. Grinnell, treasurer and Reginald M. Ames, the third director. The company is not ready to announce its manufacturing plans, the location of the works and the purchase of new equipment not having been determined upon.

The Kandle-Born Company, post office box 1074, Springfield, Mass., has been organized under Massachusetts laws to manufacture a device which will detect inaccurately fed sheets of paper on printing presses and folding machines, and other machinery. Rudolph C. Born is the president and treasurer and the other directors are Walter E. Born and Matthias M. Kandle. The company will need no equipment in the beginning, as the initial work is being done by contract.

The Sprague Meter Company, Bridgeport, Conn., will erect a new factory building. The plans are not perfected, but the structure will be about 60 x 168 ft., either three or four stories, with steel frame and fire-proof floors.

The C. G. Garragus Machine Company, Bristol, Conn., will build a three-story brick addition 25 x 40 ft. and a boiler room 22 x 46 ft.

The Union Lock-Stitch Company, East Boston, manufacturer of textile machinery, will increase its capital stock from \$150,000 to \$500,000. The new capital will be devoted to the immediate development of new machines and processes which have been invented during the past year.

The Norwich Automatic Feeder Company, Norwich, Conn., manufacturer of equipment used in the poultry business, has incorporated its business with a capital stock of \$30,000. The company states that it will not require new equipment at the present time.

Additions to general manufacturing industries of New England include the following: The Bias Narrow Fabric Company, Bridgeport, Conn., manufacturing building of brick, mill construction, to contain about 25,000 sq. ft. of floor space; Touraine Company, New Hartford, Conn., lace manufacturer, building 56 x 250 ft., one story, of reinforced concrete; Bates Mfg.

Company, Lewiston, Maine, tentative plans for the erection of an additional weave shed to cover 4½ acres, the fulfillment of the project depending upon the solution of the power question; The O. & C. Company, Ansonia, Conn., textiles, five-story concrete building; Bridgeport Cornice Works, Bridgeport, Conn., brick building 40 x 56 ft., one story and basement.

## Philadelphia

PHILADELPHIA, Pa., January 23, 1912.

The recent demand has not met the expectations of sellers of machine tools and in but few cases are reports received of any material volume of business placed since the first of the year. Negotiations are pending in connection with a few moderate sized propositions, but there is little evidence of any early placing of orders. Transactions are largely confined to single tool propositions, mostly small tools being involved, the aggregate volume of which has not been large. New inquiry is not very brisk and the market on the whole has a tendency to drag. Some fair equipment orders are in sight, one of which promises to become quite extensive, being that which will be required for the new automobile manufacturing plant of the Ottomobile Company at Mt. Holly, N. J., plans for which are nearing completion.

Railroad buying is extremely light and little new inquiry has developed. The demand for second-hand machinery has not been very active, scattered sales of metal working equipment as well as general machinery being reported, but inquiry has not been very good. The boiler and engine trade reports business rather quiet. Extreme cold as well as unfavorable weather conditions have had some influence in retarding the movement of business generally.

Harris & Richards, architects, Drexel Building, are taking estimates on a 34 x 60-ft., two-story power house, with a 20 x 34-ft. wing for St. Vincent's Home, Seventieth street and Woodland avenue. Proposals for the power equipment, including a boiler and boiler room equipment, piping, etc., will also be taken by the engineers.

The Pottstown Machine Works, Pottstown, Pa., has been fairly busy throughout the past year and has a good number of orders for its line of tapping, threading and flanging machines, as well as special machinery on its books. Special tapping machines have recently been shipped to Germany. The company has in contemplation the erection of a 60 x 150-ft. addition to its machine shop, but expects to take no definite action in the matter for several months.

Announcement is made of the incorporation of the Allen Engine Company, of this city, with a capital stock of \$10,000. Robert E. Ross, 2012 N. Twentieth street, Henry Grosscup and Howard S. Baker are named as incorporators.

The Chadwick Engineering Company, Pottstown, Pa., expects to move into its new plant, buildings for which are completed, within the next 60 days. The boiler installation, for heating purposes, has been completed and the buildings are now being piped for heating. Electricity, supplied by a local power company, will be used for general power purposes.

The question of the construction of a subway system on Broad street, in this city, is again the subject of considerable consideration. Municipal authorities are now looking into the project and a conference with engineers will be held at an early date. Several years ago a company was organized to engage in this undertaking, but owing to its inability to obtain a satisfactory ordinance from city councils the matter has been in *statu quo*. The cost of building such a subway system is generally estimated to be about \$20,000,000.

Plans are being prepared for a new structural plant for the manufacture of light iron work, to be erected by N. A. K. Bugbee, contractor, at Trenton, N. J. Particulars are not available, although it is said that work on the new building will be started this spring.

The Wilbraham-Green Blower Company, Pottstown, Pa., is operating its plant at close to full capacity. Inquiries for positive pressure blowers, vacuum pumps and gas exhausters, both motor and belt driven, have been good and a very satisfactory volume of business has recently been taken. A fair export business has also been done. Recent deliveries by this concern include shipments to Europe, Canada and the Hawaiian Islands, also to the Pacific coast and to various purchasers in the central and New England States.

Report has it that the Camden Water Wheel Works, Camden, N. J., is planning to erect a foundry building, 100 x 150 ft., and a boiler shop, 50 x 150 ft., and will



be in the market for several cranes, and a number of machine tools. Information as to the authenticity of the report is not available.

The Ottomobile Company recently mentioned as having been organized to take over the manufacture of the line of pleasure and commercial cars manufactured by the Otto Gas Engine Works, has been incorporated under the New Jersey laws, with a capital stock of \$500,000. Murrel Dobbins is president; W. S. Jones, vice-president; T. D. Marren, treasurer, and E. H. Ervin, secretary and general manager. The company will build a plant at Mt. Holly, N. J., plans for which are being prepared by Ballinger & Perrot, engineers. Considerable machinery equipment will be required for the new plant, the purchase of which the company is not yet prepared to consider.

## Chicago

CHICAGO, ILL., January 23, 1912.

The continued cold weather is held responsible for very light business in the machinery trade. Dealers report only moderate returns from territory salesmen and even lighter sales from display rooms. Confidence is expressed, however, that this temporary lull will yield to the buying spirit that is spreading to all branches of trade. Locally, the proposed plan of financing the Allis-Chalmers Company with a new issue of first-mortgage bonds is looked upon as an encouraging sign. The buying of automobiles during the show weeks is expected to be heavy and to be the fore-runner of equipment renewals and replacements at the automobile factories. The University of Chicago is in the market for equipment for one of its laboratories.

The American Steel Products & Importing Company, Chicago, has been incorporated with \$15,000 capital stock to manufacture and deal in steel and iron products. Incorporators are Samuel A. Strauss, J. A. Arkin and Arthur B. McCoid.

The Joslyn Mfg. Company, Chicago, is planning the erection of a one-story brick addition to its factory at 1015 West Thirty-seventh street. The new structure will cost \$20,000.

The Chicago Dock & Canal Company, Chicago, will erect at 213-17 East Illinois street, a six-story brick factory to cost \$125,000.

Paul Gerhardt, architect, Chicago, is preparing plans for a two-story mill construction factory, 126 x 228 ft., for the Wheeling Corrugating Company, to be erected at the intersection of Harvard and Rockwell streets, at a cost of \$150,000.

The Calumet Foundry Equipment Company, Chicago, has increased its capital stock from \$1,000 to \$300,000.

The Merle & Heaney Mfg. Company, Chicago, will erect at 2201-21 South Union place, a one-story brick boiler house to cost \$15,000.

The Rumely-Wachs Machinery Company, 121 North Jefferson street, Chicago, Ill., has been appointed exclusive sales agent in the Chicago territory for the complete line of tools manufactured by the Walcott & Wood Machine Tool Company, Jackson, Ill.

The Rayfield Motor Car Company, Chrisman, Ill., has been organized with a capital stock of \$75,000 to take over the plant and equipment of the Rayfield Motor Car Company, Springfield, Ill. The company has secured a site and has had plans prepared for a plant, the main building of which is to be 77 x 316 ft. The equipment will be moved from Springfield and much additional machinery will be installed. The officers of the company are F. K. Thayer, president; A. E. Schnitker, secretary and treasurer.

The Invincible Blow Pipe Company, Chicago, has been incorporated with \$2,500 capital stock by Otto Butsebach, John C. Zehms and Andrew H. Anderson.

Scully, Jones & Co., Chicago, have been incorporated with a capital stock of \$15,000 to manufacture and job in steel and iron. Incorporators are James A. Scully, Geo. E. Jones and S. E. Lambert.

A building permit has been issued to William Samson, Chicago, for the erection of a one-story brick factory at 118 South Paulina street to cost \$2,000.

The Illinois Malleable Iron Company, Chicago, has acquired property 132 x 660 ft. on Wellington street for the extension of its plant.

The Cairo Electric & Traction Company, Cairo, Ill., will erect an addition to its power house, 60 x 80 ft., to be of concrete and brick construction, in which two boilers and other new machinery will be installed.

The Tri-City Railway has completed its plans for the erection of a steel, concrete and brick fireproof

building, 190 x 190 ft., at Moline, Ill. The new building will cost \$85,000 and is to be used as a car-building and car-repairing plant.

The Rauwald Ecclesiastical Art Mfg. Company will erect at 522 Sixteenth avenue, Milwaukee, Wis., a three-story factory addition, 30 x 60 ft.

The Milwaukee Lithographing Company, Milwaukee, Wis., has purchased property at Sycamore and Twentieth streets as a site for a two-story factory building, 150 x 350 ft., to cost \$50,000.

The plant of the Fairbury Roller Mills, Fairbury, Iowa, was damaged to the extent of \$30,000 by fire. The erection of a new mill is contemplated.

A franchise granting the construction of an electric light, power and heating plant has been issued by the city of Morning Sun, Iowa.

Morrison Brothers, Dubuque, Iowa, recently mentioned as having been incorporated with \$50,000 capital stock, are having plans prepared for an additional building, 100 x 150 ft., of steel and glass construction. Equipment details are not as yet ready, as construction work will not be begun until spring.

## Cincinnati

CINCINNATI, OHIO, January 23, 1912.

The machine tool business is not at all satisfactory just now. Orders are scarcer and even the inquiry shows signs of a letup. However, it is reported that the automobile and auto truck builders are making plans for extensions that will bring out a very good business early in the spring.

Jobbing foundries are only operating to about 50 per cent. of capacity, but the stove foundries are doing practically a normal business. Second-hand machinery of all kinds is moving rather slowly, but dealers in this particular class of equipment entertain more or less optimistic views as to the immediate future.

At a meeting of the board of directors of the Cincinnati Business Men's Association January 19, a fellowship in economics in the University of Cincinnati was established. It is the board's opinion that a move of this kind will do much toward the expansion of numerous lines of trade and manufacture in Cincinnati.

Harig & Co., 34 East Fourth street, Cincinnati contractors, have been awarded contract for an extensive addition to the Sinton Hotel, for which considerable structural material will be required.

The Rotastrop Mfg. Company, Dayton, Ohio, was recently incorporated with \$35,000 capital stock, to manufacture patented specialties. M. John Burke and William Pfum are named among the incorporators.

James M. Hooper, architect, Provident Bank Building, Cincinnati, has completed plans for the proposed reinforced concrete warehouse to be erected for the Whitaker Paper Company, Cincinnati. The new building will be eight stories, instead of five, as was recently reported. The building contractor has not yet been selected.

The Plaut-Butler Company, Cincinnati, shoe manufacturer, has leased a building adjoining its plant and will probably add to its manufacturing facilities at an early date.

The Vinegar Bend Chemical Company, Cincinnati, whose plans for establishing a plant in Alabama for extracting turpentine and other by-products from saw-mill waste, recently mentioned, has been incorporated. Among the incorporators are George Guckenberger, Jr., D. H. Greene, W. E. Semour and others.

The Witt Cornice Company, whose sheet metal plant is located at 2118 Winchell avenue, Cincinnati, has been incorporated with \$25,000 capital stock. The incorporators are Mary R. Witt, J. W. Witt, E. W. Brown, M. W. Brown and P. W. Pogue. It is rumored that some additions to the company's plant are planned.

The Ohio Punctureless Tire Company, Columbus, Ohio, has been incorporated with \$50,000 capital stock. William Moore and C. N. Bowen are among the incorporators. Nothing is known of the company's manufacturing plans.

Smith & Mills, machine tool manufacturers, Cincinnati, held their annual meeting January 18, at which the following officers were re-elected: President and treasurer, Albert S. Smith; vice-president and general manager, James Mills; superintendent, Ernest Mills.

The E. A. Kinsey Company, Cincinnati, held its regular annual meeting January 18, at which the following officers were re-elected: L. D. Gatch, president; George C. Shays, vice-president; W. J. Radcliffe, secretary, and W. H. Gahr, treasurer. The company reports its machinery and supply business as having been

very satisfactory during 1911, especially in view of the fact that such adverse reports have been received from other sections of the country.

It is reported that the Sterling Paper Company, Hamilton, Ohio, will soon close bids for an addition to its plant that will be 60 x 180 ft., five stories.

It is rumored that the Advance Glass Company, Utica, Ohio, is contemplating erecting a plant at Newark, Ohio. No particulars are available at this time.

The Dayton Steel Construction Company, successor to the American Fence & Forge Company, Dayton, Ohio, is contemplating the erection of a plant to cost approximately \$25,000.

The stockholders of the Hamilton-Otto Coke Company, Hamilton, Ohio, met in Cincinnati January 18 and elected the following officers: President, S. M. Goodman, succeeding J. S. Thoms, resigned; vice-president, F. L. Garrison, and secretary and treasurer, W. A. Everson.

The Patrick Furnace Company, Springfield, Ohio, will probably increase its foundry capacity at an early date.

## Cleveland

CLEVELAND, OHIO, January 23, 1912.

The local machine tool market is devoid of important features. The volume of business for some time has been about the same from week to week being confined mostly to single tools with occasionally an order for lots of three or four machines. Dealers generally regard the outlook as more promising than at this time a year ago. Some new plans for plant extensions in the spring are being announced which will result in the purchase of machine shop equipment. Some machine tool builders, particularly builders of turret lathes, are getting an improved run of orders. While running at the same capacity that they have for some time they are shipping out as much machinery as they are making instead of adding more machinery to stock. Second-hand machinery is moving fairly well, but dealers have good stock on hand. The demand for electrical equipment is rather quiet, there being no inquiries for large installations.

The Perfection Spring Company, Cleveland, Ohio, has just acquired a site adjoining its Central avenue plant on which it will erect a new manufacturing building in order to increase its output. The company will build a one-floor two-story building with 50,000 sq. ft. of floor space. The company is preparing to engage in the manufacture of gas engines in addition to its present line of automobile springs.

Bardens & Oliver, Cleveland, Ohio, builders of turret lathes, expect to make large addition to their plant during the present year. Plans have not yet been prepared.

The Avery Company, Cleveland, Ohio, which was recently organized with a capital stock of \$300,000, of which \$150,000 has been issued in stock and \$150,000 in bonds, has taken over the land, buildings and heavy machinery of the Avery Stamping Company, Cleveland. The Avery Stamping Company continues to own the light machinery and patterns, tools, dies, etc., and will continue to operate the plant as it has in the past, having leased the property acquired by the Avery Company. The officers of the Avery Company are: President, R. A. Harman; vice-president and treasurer, Martyn Bonnell; secretary, Henry W. Avery. The directors in addition to the officers are Thomas P. Robbins, Geo. L. Weiss, Christian Narten and E. B. Allen.

J. N. Battenfeld, who for several years has been vice-president and manager of the Berkshire Mfg. Company, Cleveland, Ohio, has severed his connection with that company in order to devote his time to the development and manufacture of a new line of molding machines for making all classes of castings from the lightest to the heaviest work.

The Brown Hoisting Machinery Company, Cleveland, Ohio, reports a good volume of orders for locomotive cranes from railroads and industrial companies. Several orders have recently been received from South America. This company is also getting a good volume of business in its small handling equipment.

The village of Malvern, Ohio, will issue \$18,500 in bonds for the construction of a water-works system.

The Defiance Machine Works, Defiance, Ohio, has awarded to the Spieker Company, Toledo, Ohio, contract for the erection of two new factory buildings. One will be 77 x 132 ft. and the other will be 97 x 115 ft. The buildings will be of brick and concrete construction with saw-tooth roofs. The company has just been reorganized and its capital stock increased to \$600,000.

The Blevins Auto Sales Company, Toledo, Ohio, is building a two-story brick structure 50 x 100 ft. to be used as display room and repair shop. The building will be located at Madison avenue and Eleventh street.

The Lake Erie & Ohio River Railway & Transportation Company, which plans the building of a railroad from Findley, Ohio, to the Ohio River, and the International Mining & Mfg. Company, which proposes the erection of several large cement plants and the development of a southern Ohio coal, iron ore and clay lands, have been incorporated under the laws of Delaware. B. F. Howland of New York is president and manager of the railroad company, which has a capital stock of \$8,000,000, and E. P. Bingham, Wellston, Ohio, is named as president and manager of the mining and manufacturing company, whose capital stock is \$25,000,000.

The Acme Machinery Company, Cleveland, Ohio, reports a good demand for bolt and nut machinery. The company has a good volume of business on hand and has been running its plant overtime recently.

The Three-in-One Implement Company, Akron, Ohio, has been incorporated with a capital stock of \$30,000 to manufacture agricultural implements. The incorporators are Claud B. Carpenter, Walter E. Case and others.

The Toledo Steel Spring Company, Toledo, Ohio, has been incorporated with a capital stock of \$50,000 to manufacture nut locks, washers, bolts, nuts, springs and other products. C. S. Davies, N. O. Winter and others are the incorporators.

The Progressive Association, Lima, Ohio, has accepted a proposition made by A. R. Marsh, Brockton, Mass., to establish a plant in that city to be known as the Lima Motor Company with a capital stock of \$200,000 to manufacture a low-price roadster automobile.

The Buckeye Match Company, operating a plant at North Baltimore, Ohio, is to be reorganized under the name of the Pan-American Match Company. The new company has been incorporated with a capital stock of \$75,000. The plant will be enlarged and new machinery installed.

The Canton Engineering & Electric Company, Canton, Ohio, has purchased a site and will shortly begin the erection of a new plant at West Second street and North Cleveland avenue.

The Urschel-Bates Valve Company, Toledo, Ohio, will build a branch factory at Welland, Ont. A. N. Bates is the president.

Plans are being prepared for a sewage disposal plant to be built at Lima, Ohio, at an estimated cost of \$200,000.

The J. D. Smith Foundry Supply Company, Cleveland, Ohio, is designing a new brass and aluminum foundry for Dodge Brothers, Detroit, Mich. It is said that this plant will be one of the largest of its kind in the world.

The Advance Glass Company, Utica, Ohio, will remove to Newark, Ohio, where it will build a cathedral glass factory. The Utica factory recently burned.

The Youngstown Bronze & Iron Foundry Company, Youngstown, Ohio, has recently completed an addition to its foundry 100 x 136 ft.

## Detroit

DETROIT, MICH., January 23, 1912.

The past week in the local machinery market has been rather quiet, although a few dealers report a good volume of single tool sales, equally divided between wood and metal-working equipment. A number of inquiries which have been under negotiation for some time are now being closed, but strictly new inquiry is rather light, no projects involving a large amount of equipment coming before the trade. In several special lines business is better; an improved demand for grinding machinery is noted and power transmission equipment is more active. The market for second-hand machinery is spotty, but considerable interest is shown in good used metal working tools. Foundry operations show a falling off. Building circles are very quiet, owing to the extremely cold weather, and new work reported is negligible in quantity.

The Church-Field Motor Company has been incorporated with a capital stock of \$150,000 by Austin Church, Christian H. Hecker and H. G. Field. The company has acquired the old Church soda ash plant in Trenton, one of Detroit's down-river suburbs, and is remodeling it preparatory to installing machinery for the manufacture of automobiles.



The Day Automobile Company is planning the erection of extensive additions to its plant.

The Detroit Steel Cooperage Company, maker of welded steel barrels, has filed amended articles of incorporation increasing its capital stock from \$150,000 to \$500,000.

The Kreis Dynamometer Company has been incorporated with \$5,000 capital stock to manufacture dynamometers. Oscar Kreis is the principal stockholder.

The National Advance Mfg. Company has been incorporated with \$10,000 capital stock to manufacture and deal in automobile accessories. The incorporators are Albert S. Roth, D. W. Mason and Charles Simonsen.

The Delaney Specialty Mfg. Company has been incorporated with \$10,000 capital stock to manufacture automatic door weather strips and other specialties. Leeds Hunter is the principal stockholder.

D. M. Newbro & Co., manufacturer of toilet preparations, has taken out a permit for the erection of a factory building on Cass avenue, to cost \$12,500.

The Morse-Beauregard Mfg. Company has been incorporated with \$10,000 capital stock by August S. Zorn, H. L. Utter and William Beauregard. The new company will manufacture gas engines, motors and motorcycles.

The American Auto Trimming Company has increased its capital stock from \$50,000 to \$100,000 for the purpose of taking care of the steady growth of its business.

The Upton Machine Company, recently incorporated at Benton Harbor, Mich., for the manufacture of electric washing machines, has decided to remove its plant to St. Joseph, Mich. The move will permit the company to double its capacity. Emory Upton is general manager.

The Milk Producers' Company, Battle Creek, Mich., manufacturer of milk products, has purchased a new factory building and will increase its capacity.

The Freeport Cant-Slip Company, Freeport, Mich., has been organized by George Leonard and N. Bonma, and will engage in the manufacture of factory trucks and hand screws.

The power house and a portion of the plant of the New Aetna Portland Cement Company at Fenton, Mich., were destroyed by fire January 14, entailing a loss of \$100,000. Oscar J. Lingemann, of Detroit, secretary of the company, states that the plant will be rebuilt. Included in the equipment which will have to be replaced are the engines, considerable electrical equipment and some cement making machinery.

The Smith-Glass Mfg. Company Alma, Mich., has been organized by Ray Smith and Floyd Glass to manufacture pump jacks and operate a machine shop. The company is now occupying leased quarters but contemplates the erection of a building of its own in the near future.

The L. Jensen Lumber Company, Grayling, Mich., has been organized with a capital stock of \$400,000 to operate a large saw mill at Ewing, Mich. The incorporators are L. Jensen, R. Hanson and F. E. Michaelson.

The Acme Metal Weather Strip Company, Saginaw, Mich., has filed notice of an increase of capital stock from \$12,000 to \$24,000.

It is reported that Henry Lewis, Buffalo, N. Y., will erect a factory for the manufacture of furniture at Oscoda, Mich.

The greater portion of the plant of the Petoskey Block & Mfg. Company, Petoskey, Mich., was destroyed by fire January 13. Loss on the buildings and machinery will reach \$50,000. F. J. Schmitt, manager of the company, states that operations will be resumed.

The Globe Knitting Company, Grand Rapids, Mich., has decided to increase its capital stock from \$400,000 to \$600,000 to provide for the rapid increase of its business.

John Mooney, C. E. Nelson and others have organized a company to operate a canning factory at Coopersville, Mich. Work on the plant will be begun immediately.

The Argo Electric Vehicle Company, Saginaw, Mich., has increased its capital stock from \$200,000 to \$400,000.

C. E. Duryea, Saginaw, Mich., is organizing a company for the manufacture of automobiles under the Duryea patents. A factory has already been secured and operations will be begun as soon as the machinery can be installed.

The plant of the Bennett Mfg. Company, Kalamazoo, Mich., was destroyed by fire at a loss of \$25,000. The large machine shop operated by the company is a total loss.

Flint, Mich., is contemplating the purchase of three centrifugal pumps of large capacity, a number of blowers and considerable electrical equipment for the municipal water works plant. Address the Board of Water Commissioners.

The Bear River Paper & Bag Company, Petoskey, Mich., is to make improvements in its paper mill to cost \$25,000. A three-story addition to the beater room has been erected and a large amount of new equipment will be installed. A. B. Mudgett is manager.

The Pere Marquette Railway has had plans prepared for a new woodworking plant to be used for car repair and other work at Saginaw, Mich. Work on the new buildings will be started February 1.

The Central Coal Company, Bay City, Mich., has acquired a large tract of land in West Bay City for the stated purpose of building extensive coal yards and docks. It is reported that complete handling outfits will be installed.

The Norton Lumber Company, Ontonagon, Mich., has been organized to do a lumber manufacturing business. Dennis J. and J. H. Norton are the principal stockholders.

The business and property of the Monroe Steel Castings Company, Monroe, Mich., which has been operated for some time by the Seitz Auto & Transmission Company, have been bought by Malcolm Macleod, Silas A. Kring and August Laeffler, of Detroit, Ida and Wyandotte, Mich., respectively, and they have incorporated the Monroe Steel Castings Company under the laws of Michigan with \$50,000 capital stock.

## The South

LOUISVILLE, KY., January 23, 1912.

No change of marked importance has taken place in the general situation during the past week, conditions remaining fairly quiet, though prospects in nearly all lines are good. A feature of interest is the great amount of large building which is contemplated during the current year, and preliminary announcements and contract-letting are sufficiently in evidence to suggest that a lot of equipment and material will be needed to take care of this interest during 1912.

The A. Bentley & Sons Company, Toledo, Ohio, has been awarded the contract for the erection of the reinforced concrete buildings of the new Louisville city hospital, its bid being \$606,060. The bid did not include equipment of any kind, the original estimates for this all being rejected. New bids on the machinery, including the power equipment, refrigerating plant, elevators, etc., were asked for, and will be received until January 27.

H. C. Terstegge, well known in the stove foundry business in Louisville, has been elected president of the Southern Blaugas Company, of that city, which is now organizing. The company expects to be able to detail plans for the erection of its plant in the near future. It will manufacture a patented gas for use for heating and lighting in suburban and rural homes. The gas is to be transported in steel containers.

The American Culvert Mfg. Company, Louisville, has been incorporated with \$50,000 capital stock by George W. Storms, J. H. Alderson, Charles J. Fegenbush and others. The company will put out a patented culvert, made with a flat cast-iron bottom and a round sheet-iron top. The work will be done under contract for the present, but later the company may establish a plant.

Fairbanks, Morse & Co. have sold a complete lighting and power plant equipment to the Priestley-Lloyd Light & Power Company, Henderson, Tenn. The plant consists of an 80-hp. oil engine, a 55-kva. direct-connected generator, switchboard and street-lighting materials. The company has also sold a 50-hp. gasoline engine to the Citizens' National Life Insurance Company for installation in its office building at Anchorage, Ky. The sales were made through the Louisville office of the company.

The Harlan Coal Company, Louisville, has been incorporated with \$150,000 capital stock by Herman D. Newcomb, Atilla Cox, Jr., F. F. Snead, K. U. Mequire and others. The purpose of the company is to operate coal mines in Harlan County, Ky.

The Courier-Journal Company, Louisville, which is remodeling the old Federal Building for use as newspaper offices, will require electric cranes, paper-conveying machinery, elevators and other equipment in a short time, when the work is nearer completion. John

Bacon Hutchings, Louisville, is the supervising architect.

The J. W. Hudson Oil Company, Pittsburgh, Pa., is reported to have leased several thousand acres of land between Burkesville and Marrowbone, Ky., and to be purchasing equipment for drilling and operating a number of oil wells.

The M. B. Kendrick Company, Covington, Ky., is contemplating the erection of a soap factory.

The Dover Canning Company, Dover, Ky., is being organized, and will erect a plant in the immediate future.

Henderson, Ky., is contemplating improving its water-works system, one of the features under consideration being the installation of a filtration plant.

Bids will be received until February 1 on the construction and equipment of an electric light plant for Falmouth, Ky., of which N. C. Ridgeway is mayor. Anderson & Frankel, Lexington, designed the plant.

The Allen Engineering Company, Memphis, Tenn., has received a contract for the erection of an addition to the electric light plant of the Hickman Ice & Coal Company, Hickman, Ky.

The Panama Coal Company, Henderson, Ky., has leased property of the Southern Mining Company at Robard, Ky., and will begin operations in the immediate future. The capacity of the mines will be increased, and some new machinery will be needed. M. V. Denton is secretary and manager of the company.

William Adams & Son, monument dealers of Lexington, Ky., are considering the installation of a 10-ton crane in their stone-cutting plant.

The Board of Public Works, Ashland, Ky., has under consideration the erection of a garbage reduction plant. City Engineer Gesling and Dr. W. O. Eaton are looking into the question.

E. E. Maggard is considering the erection of a water-works system and an ice factory at Morehead, Ky. He is now operating the electric light plant of the municipality.

The Royal Theater, Versailles, Ky., will install a generator and motors for the operation of its picture machines and electric lights.

A bottling plant, requiring power and conveying machinery, will be built in the next few months at Humboldt, Tenn., by the Coca-Cola Company, Jackson, Tenn.

Work is to begin at once on the new plant of the Rogersville Electric Company, Rogersville, Tenn., as prices are now being asked on generators and motors. W. D. Harmon is president.

The Dyer Fruit Box Mfg. Company, Dyer, Tenn., is to install additional machinery in its electric light plant. A contract for the work has been let to the Allen Engineering Company, Exchange Building, Memphis, Tenn.

A feed mill will be erected at Memphis, Tenn., by John Wade & Sons. Additional machinery will also be installed in the grain elevator which the company is now operating.

The Myers-Whaley Company, Knoxville, Tenn., which manufactures a tunneling machine, has increased its capital stock from \$50,000 to \$150,000 for the purpose of enlarging its plant.

D. R. Newman, Blackstone, Va., is in the market for a 50-hp. boiler, locomotive type.

The Tuskegee Institute, Tuskegee, Ala., an industrial school for negroes, will install a water plant, bids to be received until February 14. Bids are being received by Walter G. Franz, consulting engineer, Union Trust Building, Cincinnati, Ohio.

The Floyd Electric Power Company, Floyd, Va., will install machinery for the generation of electricity at Little River, a concrete dam having been already erected. S. G. Proffitt is president of the company.

The Rocky Mount Ice & Fuel Company, Rocky Mount, N. C., is in the market for power equipment, including two 200-hp. and two 150-hp. boilers, a belt-driven triplex pump and a belt-driven boiler-feed pump.

Hammon, Okla., is considering the construction of an electric light plant and water system.

Fairbanks, Morse & Co. have been awarded a contract for the construction of the Savannah, Ga., shops of the Seaboard Airline Railway. The work includes the erection of machine, blacksmith, boiler and erecting shops, turntables, engine pits, power-house, etc. All of the buildings will be built of reinforced concrete and steel. It is stated that the contract does not include the installation of the equipment.

Frank L. Brown, Fairhope, Ala., is interested in the erection of a brick and tile plant.

Shepherd Bros., Columbus, Ga., have let a contract for the reconstruction of their brick plant, which was recently destroyed by fire. The new plant will have a capacity of 75,000 brick a day.

The Grace Furniture Company, Salisbury, N. C., is to rebuild its plant, which was recently burned. The estimated cost of the new factory is \$25,000.

The Eureka Stove Works, Birmingham, Ala., has increased its capital stock to \$50,000 and will erect a plant to take the place of that destroyed by fire. A foundry, erection shop, pattern-room, etc., will be built.

It is reported from Montgomery, Ala., that Robert L. Brown and others, of Springfield, Ohio, will build a plant at Montgomery for the manufacture of gasoline engines.

S. N. Harris, Savannah, Ga., is erecting an automobile garage and repair shop, and will be in the market for a fair amount of machine tools.

Birmingham, Ala., is erecting a small garbage reduction plant for experimental purposes. In case the plan works satisfactorily several others will be erected.

## Indianapolis

INDIANAPOLIS, IND., January 23, 1912.

The Indiana Reduction Company, Indianapolis, has been incorporated with \$200,000 capital stock. It will construct a plant for the reduction of garbage to fertilizer, tankage, etc. Jesse T. Moorman is at the head of the company and associated with him are Henry C. Starr, Richmond, and Fred Shaw, Winchester.

The Casmire Mfg. Company, Indianapolis, has been incorporated with \$100,000 capital stock to manufacture ice-cream freezers. The directors are B. A. Casmire, C. B. McCulloch and W. C. Bobbs.

The Hincer Mfg. Company, Shoals, Ind., has increased its capital stock from \$5,000 to \$100,000.

The Roth-Hamilton Mfg. Company, Lafayette, Ind., has been incorporated with \$10,000 capital stock to do a manufacturing business. The directors are H. C. Roth, J. M. Hamilton and D. Roth.

The filling and storage buildings of the plant of the Eckhart Carriage Company, Auburn, Ind., were burned January 16, causing a loss of \$25,000.

The Mayrose-Penry Company, Terre Haute, Ind., has been incorporated to do a general construction business. The capital stock is \$10,000; the directors, J. P. Mayrose, C. G. Mayrose and G. M. Penry.

The Elnora Electric Company, Elnora, Ind., has been incorporated as a public service corporation. The directors are H. H. Beever, J. E. Pershing and W. H. Black.

The Stamm Machine Works, Aurora, Ind., has been incorporated with \$3,500 capital stock to manufacture machinery. The directors are V. B. Canfield, Charles Ebel and C. B. Wilson.

The Cable Conveyor Company, Elkhart, Ind., has been incorporated as manufacturer with \$25,000 capital stock. The directors are Cornelius Cable, Jacob Oberholtzer and S. S. Martin.

The Knott Mfg. Company, Ft. Wayne, Ind., has increased its capital stock from \$15,000 to \$25,000.

The Rubber Regenerating Company, Mishawaka, Ind., has increased its capital stock from \$250,000 to \$1,550,000.

## St. Louis

ST. LOUIS, Mo., January 22, 1912.

Machine tool conditions continue favorable in character, though the inquiries and orders are for single tools and to a large extent from the smaller concerns. At the same time there is an increase in these small inquiries, with a growing tendency on the part of the larger concerns to inform themselves upon prices, conditions, deliveries, etc., that seems to augur well for the character of forthcoming business. Dealers are generally in an optimistic frame of mind.

The National Enameling & Stamping Company announces that it will resume work in its plants on both side of the Mississippi River at this point as rapidly as the departments can be set in motion. The total number of employees affected is about 5300.

The St. Louis Bag & Burlap Company's plant was destroyed by fire the past week with a loss of about \$75,000. The mechanical equipment will be replaced as rapidly as possible in another location.

Revised plans for the Mutual Brewery Company,



which has already purchased its site here, include an ice plant and other allied departments, the total investment running up to about \$500,000.

The Lowell Bleachery, Lowell, Mass., is clearing title and making other preparations for the construction of a very large bleachery here, work to begin in the spring. The buildings, with their equipment, will cover two city blocks.

The La Plata Ice, Heat & Power Company, Kansas City, Mo., has been incorporated with \$25,000 capital stock by G. A. Sickler, R. J. Lafite and R. J. Mairens to establish and equip a public service plant at La Plata, Mo.

Title troubles which have interfered with the construction of the new gas plant at Edwardsville, Ill., by the Edwardsville Gas Company have been cleared up and President H. J. Peckinpaugh, of Evansville, Ind., has ordered the active pushing of the construction work.

The Missouri & Illinois Coal Company, St. Louis, with mines at Rentchler Station and at Willisville, Ill., is installing an electric power plant at its St. Clair mine near Freeburg, Ill., which will supply power for several mines. It includes an 8-ton outside motor and a 5-ton gathering motor in the St. Clair mine, electric puncher mining machines, power engine and electric mining machines in its Mulberry Hill mine as well as a large amount of other equipment which will increase the raising capacity of all its properties.

The malt house, with machinery, of the brewery of Gottlieb Schanz at Quincy, Ill., has been destroyed by fire. It will be replaced at once.

The Western Millwork Company, with \$50,000 capital stock, has been organized in St. Louis by C. J. and T. J. Twillenmeier and A. E. Hausman to build and equip a wood-working plant.

The Kansas City-Missouri River Navigation Company, Kansas City, Mo., has increased its capital stock to \$1,200,000 for the purpose of equipping a line of steamers to run on the Missouri and Mississippi rivers.

The Hagen Paper Company, St. Louis, is seeking a site for the location of a plant for the reconverting paper stock. It will build or lease and will install considerable mechanical equipment.

The General Paper Stock Company, St. Louis, has closed a deal for a new location and the establishment of a large reconverting plant, with equipment increased over its present capacity.

The Moss-Satterlee Electrical Railway & Supply Company, Kansas City, Mo., with \$50,000 capital stock, has been organized by W. B. Satterlee, B. C. Moss and Jay Richardson for the manufacture of electric and other supplies.

The Fuller Lumber Company, Princeton, Mo., with \$50,000 capital stock, has been incorporated and will equip a saw and a planing mill at once. The incorporators are J. E. Fuller, M. E. Fuller and C. W. Alley.

The Savannah Mutual Telephone Company, Savannah, Ill., has been organized by L. H. Maloney, J. D. Lunness and C. C. Thill and is in the market for equipment for a telephone exchange.

The Illinois Electric Porcelain Company, Macomb, Ill., has increased its capital stock from \$30,000 to \$50,000 for the purpose of increasing its manufacturing equipment and capacity.

The Meisner Lumber & Mfg. Company, Altenberg, Mo., with \$50,000 capital stock, has been organized by Martin D. Meisner, John Meyer and Benjamin M. Hemmann and will equip a sawmill and wood-working plant at once.

The Monette Spoke Company, Monette, Ark., had its plant destroyed by fire the past week. It will be rebuilt and new machinery installed.

The City Council of Cape Girardeau, Mo., has decided in favor of public ownership of public utilities and will hold an election in April for the issue of bonds with which to buy the existing water and lighting plants and extend them to the requirements of the city.

The plant of the Union Brick Company, Iola, Kan., was totally destroyed by fire, entailing a loss of \$30,000.

The city of Wagoner, Okla., will receive bids until February 1, through W. L. Benham, engineer, for extending its electric light system and installing water works.

Storz Brewing Company, Omaha, Neb., has let the contract for the erection of a new ice factory at Sixteenth and Clark streets. The building will be 38 x 63 ft., of brick, iron and concrete construction.

The city of Stanton, Neb., has let bids for the addition to its power plant, in which a 100-hp. steam engine and boiler will be installed by the Erie City Iron Works, Erie City, Pa.

The Cotton Belt Railway will replace its shops at Pine Bluffs, Ark., recently destroyed by fire, with a machine and boiler shop of larger size and better equipment.

The Automatic Motor Plow Company, Sayre, Okla., has been incorporated with \$200,000 capital stock to manufacture farm machinery and implements. The company has had plans prepared for a factory building, and is ready to purchase its equipment, which includes lathes, lathe tools, milling machines, planers, drill and tool-grinders, shaft hangers and belting, and a quantity of woodworking tools for pattern shop. The officers of the company are: J. Y. James, president; S. Prentiss Rogers, vice-president, and Thomas J. Grisham, treasurer.

The Tulsa Boiler & Mfg. Company, Tulsa, Okla., is considering the installation of additional machinery. J. E. Carnahan is president of the company.

The Oklahoma Metal Tank Company, Tulsa, Okla., has been incorporated with \$100,000 capital stock by Charles E. Delos, William C. Guiler and others.

## Texas

AUSTIN, TEXAS, January 20, 1912.

An increase in industrial activities all over the State is to be noted. Considerable attention seems to be given to the establishment of manufacturing plants of various kinds and this gives rise to the belief that the year will be an unusually good one in this respect. One of the features of the situation is the large number of new town projects that are in embryonic state, particularly in the ranch territory of south Texas and the lower Gulf coast region. In the growth of these new municipalities one of the important features is usually the establishment of various kinds of public utilities and private industrial plants. There is a good demand for nearly all kinds of machinery, according to the reports of dealers. Encouraging reports of the continued improvement in Mexico have also been received during the last several days. Large orders for mining machinery in that country are expected to be placed soon.

Wherry Bros. will establish a planing mill at Palestine. They have purchased a site for the proposed plant.

A survey is being made for the water-works distributing system and plant that are to be installed at Mount Vernon. The work of construction will soon commence.

The Star Pottery Works, of San Antonio, has increased its capital stock from \$10,000 to \$50,000. It will make improvements to its plant.

The Pittsburgh Water Heater Company, Dallas, has been formed with a capital stock of \$5,000. The incorporators are F. G. Kune, Walter H. Walne and R. C. Frampton.

The City Commission of Dallas has under consideration the submission to a vote of the taxpayers of a proposition to issue \$500,000 of bonds for water-works improvements and for the installation of a filtration plant.

G. M. Campbell will install a pumping plant upon a tract of land near Plainview, for the purpose of irrigation.

Levy Pullin and Arthur Newman will install a machine shop at Kenedy.

C. D. Lovelace, of San Angelo, contemplates establishing a factory at San Antonio for the manufacture of guns. About \$250,000 will be invested in the enterprise.

The Stone & Webster Engineering Corporation, of Boston, Mass., has a large amount of work under way in Texas at this time. It is increasing the capacity of the plant of the Dallas Electric Light & Power Company at Dallas and will install additional equipment to the electric power station at Handley. The improvements to the plant will cost about \$300,000, and among other things will consist of a 5000-kw. turbine generator and the erection of a new building. New boilers and engines will also be installed. To the equipment of the power station at Handley there will be added a turbine generator of 4500 kw. capacity and other machinery. The company is also making improvements to its property in El Paso, having just finished installing at its power plant there a turbine generator of 2000 kw.

J. B. Salyer and M. L. King will install a large cotton gin at Georgetown.

The City Council of Brady has awarded the contract for the construction of a dam across Brady Creek

to create a reservoir for a municipal water supply to John B. Halley, of Dallas. It is also provided in the contract that he shall install a filtering plant. The city has issued \$40,000 in bonds for improving its water-works system.

J. M. Jemison, of Denison, will install a number of pumping plants upon wells which he will put down upon a tract of about 12,000 acres of land near Midland, for the purpose of irrigation.

The Uvalde & Leona Valley Interurban Railway Company will make improvements to its property at Uvalde.

An election of taxpayers will soon be held in Drainage District No. 2 of Cameron County, to vote on the proposition of issuing \$103,000 of bonds for constructing a drainage system.

The Commissioners Court of Cameron County has called an election of taxpayers to be held February 3 to vote on the proposition of issuing \$452,000 of bonds for the construction of a drainage system for the San Benito drainage district adjoining San Benito. It is expected that the bonds will carry by a large majority. Considerable drainage machinery will be required to carry on the construction work.

W. P. Wilson, director of the commercial museum of Philadelphia, has advised Governor Colquitt that he has discovered a method of extracting crude rubber from unopened cotton bolls, and that the erection of a factory at some point in Texas to extract the rubber is contemplated.

M. Swenson & Sons, New York bankers, and associates have purchased 10,000 acres of land situated on the Brazos River, near Velasco, upon which are said to be extensive sulphur deposits. The contract for the purchase of the land carries with it a stipulation to build and equip within a short time a complete plant for the mining of sulphur. Besides their mining operations the purchasers of the property will establish a town and various other industries upon the land.

The Toyah Valley Irrigation Company will soon commence the construction of a large water-storage reservoir near Balmorhea, for the purpose of affording a water supply for irrigating its land. The reservoir will cost about \$250,000, it is stated.

Moritz Spach von Goltzheim, of San Francisco, and associates are arranging to establish a powder factory at Douglas, Ariz. They expect to invest about \$25,000 in the enterprise.

The Coleman Vitriified Brick Company, which was recently formed at Coleman, with a capital stock of \$35,000, will establish a large brick-making plant. The incorporators are J. T. Morris, C. C. Frampton and C. A. Morris.

The Deming Land & Power Company has been formed at Silver City, N. M., with a capital stock of \$250,000, for the purpose of installing at Deming, N. M., a large central electric power station, the construction of an extensive system of transmission lines and the installation of a number of irrigation pumping plants. The incorporators of the company are W. D. Murray, E. A. Layne, M. F. Downs and T. L. Lowe.

Citizens of Roswell, N. M., are preparing to petition the City Council to install a municipal electric light and power plant.

The El Paso Milling Company, which is owned by what is known as the Pearson syndicate, is receiving machinery for its new woodworking plant that is to be installed at El Paso, Texas.

The Crescent Pump Works, Ft. Worth, Texas, recently incorporated to manufacture pumps, is in the market for upright steam engines from 2 to 25 hp. for direct drive.

The Federal Government of Mexico has made an appropriation of \$2,000,000 to be used in extending the municipal water-works system of Mexico City.

## The Pacific Coast

SAN FRANCISCO, CAL., January 16, 1912.

Sales of metal-working tools since the first of the year have been about up to expectations, most of the business being of a small nature. Local merchants and agents report plenty of more or less definite inquiries, but so far have been unable to close any of the larger transactions which have been pending, and anticipate no material change for some weeks. A slightly better feeling is noted in the local foundry trade, though the actual volume of work is still limited. In other lines of machinery there is more business in prospect than for many months, but buyers are evidently in no hurry to place their orders. A fair movement of wood-working machinery has been noted, but

the demand seems to have quieted down for the time being. Inquiries are beginning to come out on a number of large development projects in the interior, for which considerable general contractors' equipment will be required later in the season. The market is still burdened with large offerings of second-hand machinery of all kinds, and the majority of buyers are on the lookout for bargains.

The Enterprise Foundry Company of this city is starting work on new buildings on its recently acquired land at Richmond, Cal., where a subsidiary plant will be installed. Most of the equipment required is said to have been purchased, part of it being taken from an old foundry in Oakland.

The order for tools for the new machine shop of the Oakland, Cal., fire department has been placed with Harron, Richard & McCone, this city.

Plans will soon be completed for the state pier to be occupied by the American-Hawaiian Steamship Company, which will be equipped with electric cranes and conveyors.

A second locomotive has been ordered for use in jetty construction on Humboldt Bay, Cal., to be delivered about April 1.

The local agency for rail bonds and car equipment specialties of the Ohio Brass Company has been transferred from Pierson, Roeding & Co. to the Holabird-Reynolds Company.

W. A. Scott, formerly with Baker & Hamilton, and Percy L. Levy have formed a partnership under the name of the Continental Steel & Supply Company and will conduct a shop, mill and foundry supply business at 547-549 Howard street.

The Empire Foundry & Machine Company, Marysville, Cal., formerly an important manufacturer of hydraulic mining machinery, has closed its foundry, but will continue its machine shop.

The Consolidated Pipe Company, manufacturing riveted steel pipe, is preparing to put up a large building at Riverside, Cal.

The Union Iron Works has taken a sub-contract for the pontoon for a floating crane for the Pearl Harbor drydock, amounting to about \$125,000. The Union Iron Works has a caisson for this drydock 85 per cent. completed.

The Salt River Valley Water Users' Association of Arizona has received bids on transformers for its large hydroelectric project, the lowest being that of the Allis-Chalmers Company at \$8,000.

For the Los Angeles municipal electric plant in San Francisco canyon the Westinghouse Company's bid on electrical equipment and that of the Union Iron Works on hydraulic machinery have been recommended.

The American-Orr Concrete Pole Company is preparing to install a lot of machinery at Anaheim, Cal.

The Economic Incubator Company is preparing to install a plant at Lawndale, Cal., for the manufacture of general poultry supplies. Electric power will be used.

Manning, Maxwell & Moore are building a special flywheel turning and boring machine for a firm at Stockton, Cal. Several of their four-spindle automatic turret lathes have recently been sold in Los Angeles through the San Francisco office.

## Eastern Canada

TORONTO, ONT., January 20, 1912.

The tenor of reports continues unchanged. On all hands business is described as active—much more active than is its wont at this time of year. As we get farther into the winter the prospect improves, as there are many large programmes to be worked out which will be begun as soon as the weather permits. The machinery manufacturers are assured of a large share of the benefit of the country's great development.

Two steam fire engines, one motor-propelled and the other horse drawn, are to be added immediately to the equipment of the Ottawa Fire Department. The estimated cost is \$17,500.

Machinery to carry on extensive development will be installed immediately on the Achilles Mines property, Porcupine, Ont.

Announcement was made by the Quaker Oats Company, at Peterboro, Ont., of its intention to build a large new cereal plant and flour mill in some city or town west of Winnipeg in the spring. The exact location has not been chosen, but the company expects to get in touch with several western municipalities. Four or five places are now in view. The plant at Peterboro employs about 800 hands, and it is the intention to



provide work for about 600 at first in the western branch.

The Katie Foundry Company, Galt, Ont., is putting up new works.

Plans are filed for power development on Eel River, for Eel River Light, Heat & Power Company, Fredericton, N. B. The engineer's report showed 3,500,000 kw. per year. The company is preparing to complete development to furnish power to surrounding district, including Fredericton & Canadian Pacific Railway shops at McAdam Junction.

The contract for the steel work in the extension of the plant of the Steel Company of Canada, at Hamilton, Ont., has been let to the Hamilton Bridge Company, and \$200,000 is to be spent on machinery.

The whole power system of the E. B. Eddy Company, Hull, Que., is to be reconstructed so as to secure a supply of power for the next quarter of a century or more. The reconstruction plans include a power house of such height and strength as to utilize to the fullest extent all the water flowing on the north side of the Ottawa River at the Great Chaudiere. The present water wheels, some of which are obsolete, will be replaced. The hydroelectric plant will have three units of turbines and generators to develop 4500 to 5000 hp. each, under normal conditions. These will be operated from one central station. The present pulp mill will be removed to make room for a large central new hydroelectric power house and equipment.

Marsh & Henthorn, Belleville, Ont., will erect a new foundry and machine shops there.

## Western Canada

WINNIPEG, MAN., January 19, 1912.

The general topic among business men in this part of Canada since the new year reviews of trade conditions is the excellent outlook for industrial expansion in the year just started. Owing to the continued frosty weather there is not much activity at the present and there is a good opportunity for looking forward to the future. The leading railroad companies contemplate an unprecedented amount of construction work, and in the programme the building of several large hotels is included. Milling companies and many manufacturers in other lines are already figuring on extensions to enable them to get a larger share of the rapidly growing market in western Canada.

The city engineer of Calgary, Alberta, has prepared his report on the installation of a filtration system and various other additions to the water-works plant. The total cost of the proposed improvements is placed in the report at \$405,000.

The contract for the superstructure of the 12-story office building for the Union Trust Company, in Winnipeg, has been let to the George A. Fuller Company, Montreal, Chicago and Winnipeg.

A proposition is being discussed by the civic authorities of Portage la Prairie, Man., to establish a house-heating plant there to be run by the city.

The plant of the Bulman Lumber Company, at Cowichan, B. C., recently burned, will be rebuilt. A larger sawmill will also be built at Cushion Cove.

The Granby Consolidated Mining, Smelting & Power Company, Grand Forks, B. C., is contemplating the erection of a smelter, at a cost of \$1,500,000, for the Hidden Creek property. The secretary is Northrup Fowler, 52 Broadway, New York.

Finnie & Murray, 86 Princess street, Winnipeg, are contemplating the erection of a factory for the manufacture of tents, awnings, etc.

A new sawmill of considerable capacity is to be established near Coalmont, in the Similkameen district of British Columbia, by the local coal company.

Varsefeld Bros. laid the foundation of a sawmill at Fruitvale, B. C., before frost set in and the plant will be rushed to completion in the spring.

Application has been made by the Gibbons Lumber Company, Ltd., Revelstoke, B. C., for permission to construct and operate an aerial tramway from Dominion timber berth 316 over the Columbia River, to connect with a siding on the Arrowhead branch of the Canadian Pacific Railway.

Work is to be begun without delay on the brewery that is to be built at Calgary, Alberta, for A. E. Short, Conrad Knapp and D. MacLaren, at a cost of \$200,000.

The Saskatchewan Bridge & Iron Company has taken over the plant of the Moose Jaw Machine Company, Moose Jaw, Sask. A \$250,000 plant is in course of erection.

The Portland Cement Construction Company has let the contract for the immediate construction of a

cement plant on Tod Inlet, Vancouver Island. The work of excavating for the industry is now under way and it is expected that the work on the upper structure will be started as soon as the weather moderates. It is stated that the cost of the proposed plant will approximate very closely \$1,000,000.

## Government Purchases

WASHINGTON, D. C., January 22, 1912.

The Chief Quartermaster's office, Central division, Chicago, Ill., will open bids until February 15 for the construction of a filtration plant at that post.

Canal circular 675, of the Isthmian Canal Commission, Washington, calls for bids to be opened February 15 for the necessary lifting trusses, lifting mechanism, electrical equipment, signals, etc., for the complete construction of a bascule bridge on the Panama Railroad.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids February 13, under schedule 4288, for a quantity of pneumatic tools, including 130 hammers, 120 scaling hammers, 12 short holders-on, 170 drilling machines, 1 wood-boring machine and 12 riveters.

The Bureau of Yards and Docks, Navy Department, Washington, opened bids January 13 for three 200-kw. motor generator sets and controlling panels for the Navy Yard, New York, as follows:

General Electric Company, Schenectady, N. Y., \$14,645; Crocker-Wheeler Company, Ampere, N. J., \$18,500; Ridgway Dynamo & Engine Company, Ridgway, Pa., \$13,788; Westinghouse Electric & Mfg. Company, Washington, D. C., \$14,821.75.

## Carl Still By-Product and Benzol Plants

Bagley, Mills & Co., Ltd., 230 West Thirty-ninth street, New York, the representative for Carl Still, of Recklinghausen, report that they are building a number of by-product coke oven plants, including two batteries for Robert Heath & Sons at their Birchenwood Collieries, England, equipped with a lighting gas plant for providing a supply of gas for public use in the district; one battery for the Phoenix Iron Company; one battery for the Wolfsbank Colliery (a repeat order), consisting of high capacity ovens, with separate recovery system for lighting gas, which will be used in the town of Essen, and 60 ovens for the König Ludwig Collieries. The firm is reconstructing 80 Otto system ovens at the Neucoln Collieries according to the well-known Still-regenerative system.

Bagley, Mills & Co., Ltd., are also building a large number of benzol plants, including a complete recovery and rectification plant for Pease & Partners, Ltd., in connection with 135 Otto-Hilgenstock ovens; four installations for Bolckow, Vaughan & Co., Ltd., in connection with Otto, Semet-Solvay and Coppee batteries of ovens (a repeat order), in addition to numerous complete plants in Germany for such well-known firms as Krupps of Essen, the Phoenix Iron Company, and the German Government Mines Department, the installation for the latter having a capacity of 2,000,000 tons of coal annually. Over 90 per cent of the benzol plants in Germany have been erected or reconstructed by Carl Still. Bagley, Mills & Co., Ltd., will open an office in Montreal.

**Vanadium Steel for Automobiles.**—The January number of American Vanadium Facts, the monthly house organ of the American Vanadium Company, Frick Building, Pittsburgh, Pa., is appropriately an automobile number and contains several articles calling attention to the use of Vanadium steel in automobile construction. Among those which are especially interesting are the one showing the results of tests made on the crank shaft and front axles of the Ford Motor Company's cars and a full-page article composed chiefly of illustrations of the various automobile parts made by the Transue & Williams Co., Alliance, Ohio. A brief symposium giving the various uses for which this steel is used by the different manufacturers is also included.

The Shirley Radiator & Foundry Company, Shirley, Ind., advises the trade that it is not out of business, but will have its new plant, bigger and better than before, ready for operation within a few weeks. The company's large warehouse was not damaged by the recent fire which burned the foundry.

# Current Metal Prices.

The following quotations are for small lots. New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly report.

IRON AND STEEL— Bar Iron from Store—	
Refined Iron:	
1 to 1½ in. round and square	lb 1.70¢
1½ to 4 in. x ½ to 1 in.	lb 1.80¢
1½ to 4 in. x ½ to 1 in.	lb 1.80¢
Rods—½ and 1-16 round and square.	lb 1.80¢
Angles:	
3 in. x ¼ in. and larger	lb 1.80¢
3 in. x 3-16 in. and ¼ in.	lb 2.20¢
1½ to 2½ in. x ¼ in.	lb 1.95¢
1½ to 2½ in. x 3-16 in. and thicker	lb 1.85¢
1 to 1½ in. x 3-16 in.	lb 1.95¢
1 to 1½ in. x ¼ in.	lb 2.00¢
¾ x ½ in.	lb 2.10¢
¾ x ½ in.	lb 2.15¢
¾ in. x ½ in.	lb 3.35¢
¾ x 3-32 in.	lb 4.40¢
Teas:	
1 in.	lb 2.25¢
1½ in.	lb 2.10¢
1½ to 2½ x ½ in.	lb 1.90¢
1½ to 2½ x 3-16 in.	lb 2.00¢
3 in. and larger	lb 1.85¢
Beams:	
Channels, 3 in. and larger	lb 1.80¢
Bands—1½ to 6 x 6-16 to No. 8	lb 2.00¢
Burden's "H. B. & S." Iron, base price	lb 2.95¢
"Burden's Best" Iron, base price	lb 3.15¢
Norway Bars	lb 3.60¢

## Merchant Steel from Store—

Bessemer Machinery	lb 1.70¢
Toe Calk, Tire and Sleigh Shoe	lb 2.50¢ @ 3.00¢
Best Cast Steel, base price in small lots	lb 7¢

## Sheets from Store—

Black	
One Pass, C.R.	R.G.
Soft Steel	Cleaned
No. 16	lb 2.40¢ @ 2.95¢
Nos. 18 to 20	lb 2.45¢ @ 3.05¢
Nos. 22 and 24	lb 2.50¢ @ 3.15¢
No. 26	lb 2.55¢ @ 3.25¢
No. 28	lb 2.70¢ @ 3.45¢

## Russia, Planished, &c.

Genuine Russia, according to assort-	
ment	lb 12 @ 14½
Patent Plainished, W. Dewara	
Wood	lb A. 10¢; B. 9¢ net

## Galvanized

Nos. 12 and 14	lb 2.75¢
No. 24	lb 3.10¢
No. 26	lb 3.30¢
No. 28	lb 3.60¢
No. 20 and lighter 36 inches wide, 25¢ higher.	

Genuine Iron Sheets— Galvanized	
Nos. 22 and 24	lb 5.50¢
No. 26	lb 6.00¢
No. 28	lb 7.00¢

Corrugated Roofing—	
2½ in. corrugated.	Painted. Galvd.
No. 24	100 sq. ft. \$3.75 \$4.70
No. 26	100 sq. ft. 2.85 3.90
No. 28	100 sq. ft. 2.50 3.65

Tin Plates—	
American Charcoal Plates (Per Box)	
AAA Charcoal:	
IC, 14 x 20	\$6.35
IX, 14 x 20	7.60
A Charcoal:	
IC, 14 x 20	\$5.30
IX, 14 x 20	5.40
American Coke Plates—Bessemer—	
IC, 14 x 20	107 lb. \$4.20
IX, 14 x 20	5.20

American Terne Plates—	
IC, 20 x 28 with an 8 lb coating	\$8.10
IX, 20 x 28 with an 8 lb coating	10.10

Seamless Brass Tubes—	
List November 13, 1908	Base price, 18¢

Brass Tubes, Iron Pipe Size—	
List November 13, 1908	Base price, 18¢

Copper Tubes—	
List November 13, 1908	Base price, 21¢

Brazed Brass Tubes—	
List February 1, 1911	20%¢ lb

High Brass Rods—	
List February 1, 1911	15%¢ lb

Roll and Sheet Brass—	
List February 1, 1911	16¢ lb

Brass Wire—	
List February 1, 1911	15%¢ lb

Copper Wire—	
Base Price,	Carload lots mill 15%¢

Copper Sheets—	
Sheet Copper Hot Rolled, 16 oz. (quantity lots)	lb 19¢
Sheet Copper Cold Rolled, 1¢ lb advance over Hot Rolled.	
Sheet Copper Polished 20 in. wide and under, 1¢ lb square foot.	
Sheet Copper Polished over 20 in. wide, 2¢ lb square foot.	
Planished Copper, 1¢ lb square foot more than Polished.	
Tinning, one side, 3¼¢ lb square foot.	

## METALS—

### Tin—

Straits Pig	lb 47¢ @ 48¢
-------------	--------------

### Copper—

Lake Ingot	lb 15¼¢ @ 16¼¢
Electrolytic	lb 15¼¢ @ 15¼¢
Casting	lb 15 @ 15¼¢

### Spelter—

Western	lb 7% @ 7¼
---------	------------

### Zinc—

No. 9, base, casks	lb 8¼¢. Open, lb 9¼¢
--------------------	----------------------

### Lead—

American Pig	lb 5¼¢ @ 5¼¢
Bar	lb 7 @ 7¼¢

### Solder—

½ & ⅓ guaranteed	lb 26% @ 27¼¢
No. 1	lb 24¼¢ @ 25¢
Refined	lb 23 @ 23¼¢
Prices of Solder indicated by private brand vary according to composition.	

### Antimony—

Cookson	lb @ 10¼¢
Halletts	@ 10¢
Other Brands	@ 9¼¢

### Bismuth—

Per lb	\$2.00 @ \$2.25
--------	-----------------

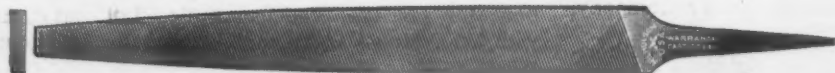
### Aluminum—

No. 1 Aluminum (guaranteed over 90% pure), in ingots for remelting (ton lots)	20 to 21¢
Rods & Wire	Base Price 31¢
Sheets	Base Price 33¢

### Old Metals—

Dealers' Purchasing Prices Paid in New York.	
Copper, heavy and crucible	12.25
Copper, heavy and wire	12.00
Copper, light and bottoms	11.00
Brass, heavy	8.50
Brass, light	6.50
Heavy machine composition	10.50
Clean brass turnings	8.00
Composition turnings	9.00
Lead, heavy	4.00
Lead, tea	3.75
Zinc, scrap	4.75

# Nicholson Files and Rasps



Nearly half a century ago **Nicholson Files** established a reputation for exceptionally keen bite and long life. Users began to insist on the files that bore "**Nicholson**" on the tang.

Today **Nicholson Files** are always specified by men who consider efficiency and economy of paramount importance. That's because the reputation established nearly half a century ago has been and will be maintained by every "**Nicholson**" File that leaves our hands.

**Nicholson File Co., Providence, R.I., U.S.A.**



same  
ance  
pany  
in i  
east  
Bro  
daily  
about  
The  
blas  
vert  
pou  
Alli  
gine  
bein  
thre  
one  
Cah  
4000  
othe  
16  
of 4  
tem  
stov  
four  
but  
two-  
bust  
from  
sq.  
surf  
chee  
exce  
thre  
com

T  
ing  
men  
mach  
hand  
Bess  
all o  
the  
durin  
deliv  
ladle  
at t  
a di  
miles  
nace  
meta  
over  
direc  
to t  
switc  
about  
In  
a. c.